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ABSTRACT

Presented is a resource book to be used with instructional kits for elementary school science students in kindergarten. The individual units at this grade level are based on curriculum which has been developed by the National Science Foundation in the 1960s and revised to meet student and teacher identified needs in Anchorage, Alaska. Nine units are included within this guide. Each unit lists kit and non-kit items, supplemental materials, teacher background information, and proposed schedule. Worksheet masters are also included. Unit topics include Color, Shape, Size, Position, Quantity, Touch (Texture), Odor, Sound, and Observing Plants. (CS)

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ELEMENTARY SCIENCE GUIDE

KINDERGARTEN

1978

SUPERINTENDENT OF SCHOOLS
ANCHORAGE SCHOOL DISTRICT
4600 DEBARR ROAD
ANCHORAGE, ALASKA 99504

SE 031 444

JUL 15 1980

FOREWORD

This Resource Book has been prepared for use with instructional kits distributed through the Anchorage School District Science Center. These kits were developed by the Elementary Science Curriculum Committee under funding by ESEA Title IV B & C in response to student and teacher identified needs.

The individual units at each grade level are based on curriculum which has been developed by the National Science Foundation in the 1960's. The curriculum has been taught by thousands of teachers throughout the United States. The Anchorage School District adopted this curriculum and our Anchorage teachers have adapted it to fit our needs and our scope and sequence. The Anchorage School District is enthusiastic about this effort and believe that this guide and the Science Center will represent more effective and efficient ways of teaching science.

The process of curriculum planning and development requires the help of many teachers, principals and administrators. We appreciate the cooperation and assistance of everyone who has contributed to this project.

E.E. (GENE) DAVIS, ED.D
ASSISTANT DEPUTY SUPERINTENDENT

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The development of this guide represents the contribution of many talented people during the past two to three years. We are very grateful to the following people for the unique contribution each of them made in developing our science program.

The guide material was written by the following people:

1st trial edition 4-6 writing team summer 1977.

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The Minneapolis School District - Minneapolis, Minnesota - Joseph Premo.

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SCIENCE CONSULTANT

EW:dc

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time turn to page vii.

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(To be taught in any sequence)

Color
Shape
Size
Position
Quantity
Touch (Texture)
Odor
Sound
Observing Plants

OUTCOME STATEMENT

For Students Grades K-6 -- Science

The major outcome of science education in the Anchorage Schools is the development of scientifically literate citizens. A scientifically literate person is generally described as a person who:

- Understands enough of the fundamental concepts of the physical and biological nature of the world so that he/she may act responsibly.
- Possesses science skills and processes that give rise to facts and concepts.
- Possesses attitudes or values generally associated with science such as curiosity and respect for data.
- Uses science concepts, skills and values in making decisions as he/she interacts with other people and with his/her environment.
- Is aware of the interrelationship taht exists between cultural, philosophical, environmental, and social changes and scientific and technological advancements.

The role of the elementary school is to provide concrete, first hand experiences for students so that they may begin the process of becoming scientifically literate citizens. Because a child's mind changes in the manner it operates, and does not simply increase in capacity as it matures, the K-6 outcomes will be concrete and demand direct student observations. Nevertheless, these outcomes are important prerequisites for the later outcomes.

By the end of the sixth grade a student should be able to:

- Observe and describe a simple event using more than one sense.
- Record and share observations with others.
- Classify a set of objects.
- Collect and organize simple data.
- Interpret the meaning of simple data
- Set up a simple experiment to answer a question
- Read scientific materials critically.

OUTCOME STATEMENT (Continued)

- Demonstrate a basic understanding of the function of the ecosystem and his/her relationship to it.
- Demonstrate a basic knowledge of the systems of the human body.
- Demonstrate a basic knowledge of physical science concepts to which he/she has been introduced.

1 Each unit will have:

A. A listing of kit and non-kit items.
B. Supplemental materials list.
C. Teacher background information.
D. A schedule.

UNITS
Listings
Information
Schedule

August —— July
S M T W T F S

2 The units have been developed to be taught anytime throughout the year.

3 The approximate times needed for each unit are included to help you in your long range planning.

Long Range Planning

Work Sheet
MASTERS

4 Worksheet masters are included in your guide for reproducing.

5 Call the Science Center if you have a problem.

TEACHER'S RESOURCE BOOK

FOR

KINDERGARTEN - SCIENCE

September 1978

Elementary Science Education Curriculum
Committee Writing Team - Summer 1978

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A Program Development Department Production

September 1978

TEACHER'S RESOURCE BOOK
FOR:

COLOR

SHAPE

SIZE (& serial ordering)

POSITION

QUANTITY (& counting)

TOUCH (texture)

ODOR

SOUND

OBSERVING PLANTS

BASIC PROCESS SKILL OBJECTIVES

Observing

1. Identify and name properties of an object or situation by using at least four of your senses.

2. Construct statements of observations in quantitative terms.

3. Construct statements of observations that describe observable changes in the properties of an object.

Inferring

1. Distinguish between observations and inferences.

2. Construct one or more inferences from a set of data.

3. Describe and demonstrate additional observations or data needed to test alternative inferences.

4. Identify observations that support an inference.

Classifying

1. Identify and name observable properties which may be used to classify objects.

2. Construct a one, two or multi-stage classification of a collection of objects and name the observable properties on which the classification is based.

3. Construct two or more different classification schemes for the same collection of objects—each with a different function.

4. Construct a bar graph to describe a collection of objects.

5. Use a simple taxonomic key to identify a bird, flower or tree.

Communicating

Verbally:

1. Describe the properties of an object in sufficient detail so that another person can identify it.

2. Describe changes in the properties of an object.

Mathematically:

1. Identify and name points on the number line given in position and negative numbers, zero and fractional numbers expressed as decimals.

Communicating (con't.)

Mathematically:

2. State and apply rules for expressing the mean (average) of a set of numbers, rate as ratios, and decimal equivalents of ratios.

Graphically:

1. Construct a table from a set of data.
2. Construct a bar graph from a table of data.
3. Construct a line graph from a table of data.
4. Draw a diagram (pictorial representation) of an object in sufficient detail.
5. Draw a map to a scale.

Measuring Metrically

1. Identify and name appropriate metric units used to measure quantities of length, weight, volume and temperature.
2. Demonstrate the use of simple measuring metric instruments to measure length, weight, volume and temperature.
3. Demonstrate the conversion of units within the metric system.

COLOR

FOREWORD

Most of these science lessons are intended to be used with a small group of children (not more than eight) using a maximum of thirty minutes per lesson. If your teaching style includes the use of centers, the science lesson could be used in a center with the teacher or other responsible person as the resource person. If your teaching style is more traditional, you could set aside 30 minutes on successive days to work with each group while the other children have free time. You would need to have a parent helper, aide, or older student in the classroom to assist those children not involved in the science lesson. Children should be aware that each will have a turn with the lesson activities.

LESSON PLAN #1 COLOR

Title: Color of Objects in the Classroom

Source: SCIS, Beginnings, p. 24 (next page)

Content Objective(s): The children will be able to identify and group objects according to color.

Process Objective(s):
Observing #1, 2, 3
Inferring #1, 3, 4
Classifying #1
Communicating, verbally #1

Equipment:
Magazines
Scissors
Various objects
Colored construction paper
Hap Palmer record on colors

Procedure/Activities/Trips: Lesson 1 - Color of objects in classroom

1. Students explore the class to find various colors. Discuss in the group.
2. Given magazines and a piece of colored construction paper, they will find pictures which match the color of the paper.
3. Hand out pieces of construction paper--(1 per child), yellow, red, blue and green. Play the Hap Palmer song, "This Is A Song About Colors" available on Hap Palmer record "Learning Basic Skills Through Music", Volume 1. Have the children do what it says when their color is called out.

1 Color of Classroom Objects

TEACHING MATERIALS

For each of six to eight children:

1 old magazine*
scissors*

For the group:

collection of objects*
6 sheets of construction paper*
* provided by the teacher

ADVANCE PREPARATION

Place several solid-colored objects on a table. Obtain sheets of construction paper in different colors and label each sheet with the name of its color.

TEACHING SUGGESTIONS

Gather the children around a table and ask questions such as: "Who can find something red?" "Hold up a blue object." "Point to something yellow on the table." "Can you find an object in the room with both red and blue in it?"

Finding colors. Display the labeled sheets of construction paper. Give the children the magazines and scissors and challenge them to find and cut out an example of each color displayed. Suggest that they cut out just that part of a picture that matches the color of the display sheet. When a child has his set of cutouts, look it over with him and see if he can tell you the name of each color. Help him as necessary with his color vocabulary. Later, the children can combine their sets and discuss similarities and differences in their examples of each color.

Properties. After the children have had many experiences identifying objects by one property, invite them to look for objects that you describe by using two or more properties. For example, ask them to find a red, square object. Some children will find this activity difficult. Do not press the issue; simply provide a variety of interesting experiences for identifying objects by properties.

LESSON PLAN #2 COLOR

Title: Sorting Parquetry Blocks by Color

Source: SCIS, Beginnings, p. 25 (next page)

Content Objective(s): The children will be able to group various objects according to color.

Process Objective(s):
Observing #1, 3
Inferring #1, 4
Classifying #1, 2, 3
Communicating #1

Equipment:
1 cardboard tray (box)
8 to 10 parquetry blocks (containers 1, 2, and 3)
Sheets of construction paper or pieces of fabric
4 large pieces (butcher for teacher)
4 or 5 felt tip pens

Procedure/Activities/Trips:

1. Given 8-10 parquetry blocks sort according to color.

2. Given construction paper squares have children match parquetry blocks to construction paper squares.

3. Pass out glue, construction paper and colored paper squares of various colors. Have children make patterns with the squares.

   Then, give the children parquetry blocks and repeat pattern made on construction paper.

2 Sorting Parquetry Blocks by Color

TEACHING MATERIALS

For each of six to eight children:

- 1 cardboard tray (Box C)
- 8–10 parquetry blocks (Containers 1, 2, and 3)

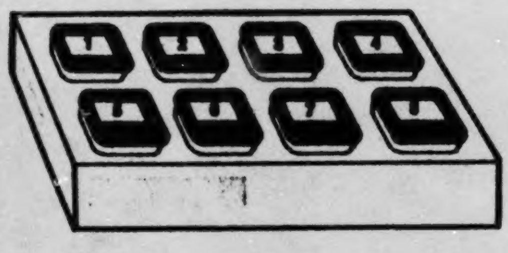
For the group:

- sheets of construction paper or pieces of fabric*
- 4 large pieces of butcher paper*

For the teacher:

- 4 or 5 felt-tip pens or crayons*

* provided by the teacher



ADVANCE PREPARATION

Place parquetry blocks on a tray for each child. You can simplify the activity by first selecting blocks of the same shape but different colors. (It is not necessary for all children to have identical assortments.) Select felt-tip pens and construction paper or pieces of fabric that approximately match the colors of the parquetry blocks.

TEACHING SUGGESTIONS

Give each child a tray of blocks and tell him he can do anything he likes with them. Talk to the children as you walk among them. Observe their work, asking questions such as, "What are you making?" and "What can you tell me about this?" These questions give the children a chance to use the names of colors as they describe their work to you. Some children will not have the necessary vocabulary to answer your questions. In that case, ask questions similar to the following, providing words the children lack: "Have you made a design of red and blue and yellow blocks?" "Are all of the shapes in your design triangles?" "Did you make a house?"

Introducing color another way. Hold up a yellow block and invite the children to hold up yellow blocks. Continue, using blocks of other colors. Then, without holding up a block, name a color and ask the children to hold up blocks of that color, or ask them to name the colors of the blocks they have in front of them.

Sorting by color. Ask each child to group his blocks by color and to count the number of groups he has. Then ask how many different colors he has. You can continue number work by asking the children which color group has the most blocks or how many blocks are in each color group.

Color matching. Show the construction paper (or colored fabric) to the children. Ask them to place their blue blocks on the blue paper (or fabric). Repeat for other colors, or have each child work with a different color. Later, vary the instructions by asking them to place, for example, their blue blocks on red paper. Using colored felt-tip pens, draw large circles on butcher paper and ask the children to place the appropriately colored blocks within the circles.

During color-matching activities, some children may be concerned because, for example, the blue block and blue paper (or circle) are not the same shade. Discuss differences children see in the color of the blocks and the backgrounds. By describing and discussing these differences children develop their language capabilities. At this time, you may wish to introduce the activities on shades of color (Chapter 7), using color chips or similar materials.

Further activities. Depending on the children's interests, you can decide wh[illegible]ther parquetry-block activities to use with your class. You will fin[illegible]dditional activities in Part Two, "Shape."

LESSON PLAN #3 COLOR

Title: Stringing Beads by Color

Source: SCIS, Beginnings, p. 27 (next page)

Content Objective(s): The children will be able to identify various colors.

Process Objective(s):

Observing #1, 2
Inferring #1
Classifying #1, 2
Communicating, verbally #1

Equipment:

1 cardboard tray (Box C)
10 to 15 wooden beads (containers 4 and 5)
1 shoelace (container 5)
For teacher - 30 wooden beads (container 4 and 5)
3 shoelaces (container 5)

Procedure/Activities/Trips: Lesson 3 - Stringing Beads by Color

Let children examine beads

Given knotted shoelace and beads:

1. Have them make color patterns.
2. Have them make specific patterns, 2 blue, 1 red, and 2 yellow.
3. String all beads of a specific color.

DISCUSS

3 Stringing Beads by Color

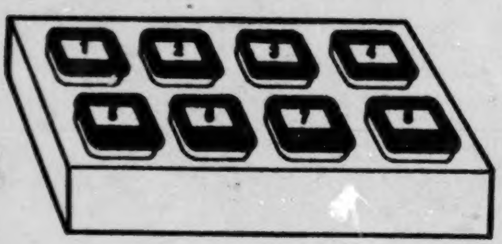
TEACHING MATERIALS

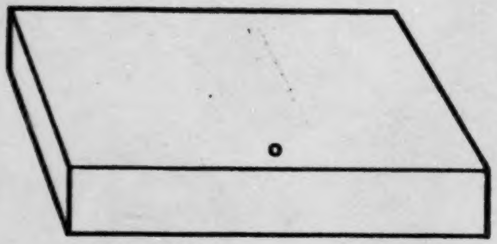
For each of six to eight children:

- 1 cardboard tray (Box C)
- 10–15 wooden beads (Containers 4 and 5)
- 1 shoelace (Container 5)

For the teacher:

- 30 wooden beads (Containers 4 and 5)
- 3 shoelaces (Container 5)





ADVANCE PREPARATION

Put beads of different colors onto each child's tray. If you wish, use beads of only one shape to make the activity easier. Knot one end of each shoelace.

TEACHING SUGGESTIONS

Give each child a tray of beads and a shoelace. Ask the children to make color patterns as they string beads on the shoelaces. Allow them time to try a number of patterns. Talk with each child and ask him to describe his pattern to you. Encourage children to describe their patterns to each other or the group.

Following a pattern. Form a simple pattern of differently colored beads on a shoelace (for example: blue, red, blue, red) and ask the children to duplicate your pattern. Each child can compare his string of beads with yours, finding and correcting his own errors. Later, make a more complex pattern by using two beads of one color and one of the other, or by using three colors. You might begin a pattern (for example: red, green, blue) and ask the children if they can repeat the same pattern. A more difficult task for the children is to follow a pattern that you describe verbally. For example: "Make a bead string of two reds, then a blue, then two more reds." All these activities will help develop the children's visual sequencing (ordering of colors) skills and reinforce their color vocabulary.

LESSON PLAN #4 COLOR

Title: Color on Flannel Board

Source: SCIS, Beginnings, p. 28 (next page)

Content Objective(s): The children will be able to discriminate between likenesses and differences.

Process Objective(s):
Observing #1, 2
Classifying #1
Inferring #1, 2, 4
Communicating, verbally #1

Equipment:
8 to 10 felt pieces (container 6)
1 small flannel board (Box C)
For group - large flannel board (Box C)
5 to 6 felt strips
For teacher - 8 to 10 pieces of felt (container 6)

Procedure/Activities/Trips: Color on Flannel Board

Pass out pieces of felt to children. On large flannel board, place a piece of felt.

1. Have children find the piece of felt that is the same as the one on the flannel board.
2. In groups of one to three have them sort colored flannel pieces.
3. Have them make a pattern using colored felt on the small flannel board.

Discuss

Suggestion to teachers: Small flannel boards can be made by using 12" square carpet squares attached to plywood. (Other side can be painted as chalk board).

4 Color on Flannel Boards

TEACHING MATERIALS

For each of four to six children:

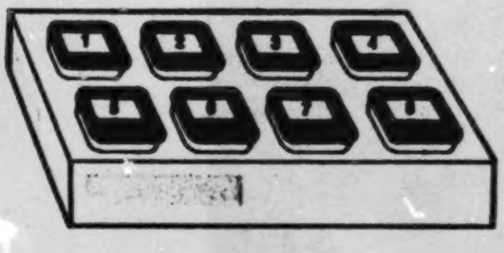
- 8–10 felt pieces (Container 6)
- 1 small flannel board (Box C)

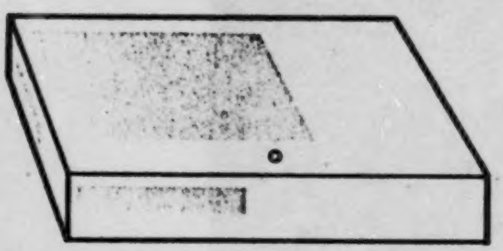
For the group:

- large flannel board (Box C)
- 5 or 6 felt strips (Container 6)

For the teacher:

- 8–10 felt pieces (Container 6)





ADVANCE PREPARATION

Set up the large flannel board, using the printed instructions. To simplify the activity, use felt pieces all of the same shape.

TEACHING SUGGESTIONS

Using the large flannel board. Distribute three or four felt pieces to each child. Place a piece of felt on the large flannel board and ask a child to pick a felt piece from his assortment that matches the one on the board. Ask the child to give reasons for his choice and then let him place the felt piece on the board. Repeat this activity with different children. Later, divide the flannel board in half and put up three or four felt pieces of different colors on one half; place matching pieces on the other half of the board, but in a different order. Ask one or two children to connect the matching pieces with felt strips.

Individual flannel boards. Give each child a flannel board and eight to ten felt pieces. You might make a pattern on the large flannel board for the children to copy, or you might ask them to place felt pieces on their boards as you name colors. You can increase the complexity of your oral instructions to match the capabilities of individuals in the group. Children can have significant visual sequencing and number experiences using the flannel boards.

LESSON PLAN #5 COLOR

Title: Color in Nature: Field Trip

Source: SCIS, Beginnings, p. 29 (next page)

Content Objective(s): The children will be able to compare and group various objects according to color.

Process Objective(s):
Observing #1, 2
Inferring #1, 2
Classifying #1
Communicating, verbally #1

Equipment:
Plastic bags
Plastic spoons

Procedure/Activities/Trips: Field trip to wooded area.

1. Allow children to explore the foilage and to collect leaves and objects of interest.
2. When brought back to the classroom, have the children observe and classify.
3. If you have an opportunity to take the class on a short field trip, do so, and allow the children to collect items for comparison with those of the schoolyard.
4. Caution the children about mushrooms. Several of the brightly colored ones are poisonous and should not be collected.
5. You might combine this field trip with a berry-picking expedition. Children could learn to distinbuish between edible species (high and low bush cranberries, blueberries and crowberries) and in edible or poisonous berries (bunchberries, orange ones, elderberries and baneberries).

5 Color in Nature

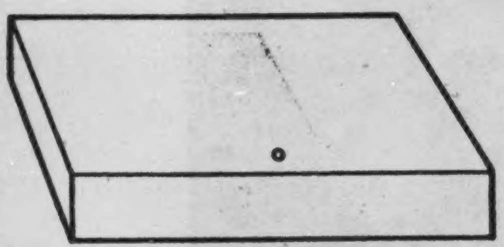
TEACHING MATERIALS

For each of six to eight children:

8–10 rocks, sea shells, or leaves (provided by the teacher)

For the teacher:

plastic bags (Box C)



ADVANCE PREPARATION

The selection of objects you work with will depend on what is available in your area. If you collect leaves, store them in plastic bags to keep them fresh. To avoid the formation of mold on the leaves, be sure they are dry before bagging them. Extensive collections of shells and rocks are included in the SCIS *Material Objects* kit (Level 1). You may want to borrow some of these for use with your class.

TEACHING SUGGESTIONS

Rocks. Distribute an assortment of rocks to each child. You may ask the children to search for rocks containing various colors you name or to sort the rocks by color. As they do this, you might discuss differences in the shades of colors in the rocks. Beach pebbles are particularly interesting. Children enjoy observing the deepening of colors when the pebbles are moistened. Interesting mosaics can be constructed with the rocks and pebbles.

Sea shells. Distribute the assortment of shells and ask the children to sort them by colors or by shades of the same color. If the school is near a lake or ocean, a trip to the beach to collect shells can be a highlight of the year.

Fall leaves. Colorful fall leaves provide interesting objects with which to work. Give each child an assortment of leaves from one kind of tree and ask him to sort the leaves into groups according to color. Some children may sort by size instead of color; in that case, ask them to sort the leaves within each group by color. Later, you might use leaves from a variety of trees and have the children sort them as they wish. During the sorting activities, discuss the variation in a single color found in the leaves. Some children may want to sort their leaves of one color by shade, from light to dark.

LESSON PLAN #6 COLOR

Title: Color: In Flowers

Source: SCIS, Beginnings, p. 30 (next page)

Content Objective(s): The children will name and describe various colors.

Process Objective(s):
Observing #1, 2
Inferring #1, 2
Classifying #1
Communicating, verbally #1

Equipment:
Any filmstrip (pictures of flowers) or Film F1448, 11 min. "What Do Flowers Do" needs to be previewed for grade level
Live flowers (if possible)
Paint
Paper

Procedure/Activities/Trips:

1. Show filmstrip. Stop each frame to discuss the pictures and colors.

2. Provide various pictures of flowers (color). Have them sort pictures as to color and/or type.

3. Allow children to examine live flowers and have them sort to type or color.

   -OR-

   Given paints, have the children paint their own flower garden.

4. Press flowers under weights or in a flower press. When flower is dry and flat, iron between 2 sheets of wax paper and mount in construction paper frames of matching color for display.

ART IDEA:

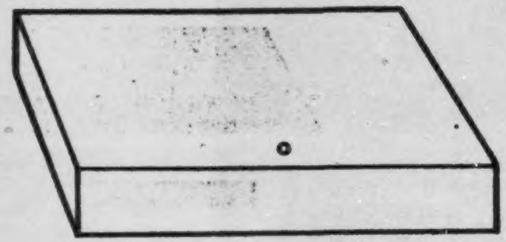
1. Make a large bouquet of flowers from all in the class.

2. Have each do a bouquet of flowers with a flower from each color.

6 Color in Flowers

TEACHING MATERIALS

For a group of six to eight children:
- filmstrip, "Color" (Box C)
- filmstrip projector (provided by the teacher)



ADVANCE PREPARATION

Obtain and set up the filmstrip projector. You may wish to carry out this activity with the whole class. Note: Totem pole pictures make up the last five frames of the filmstrip. They will be used in future chapters (9 and 15).

TEACHING SUGGESTIONS

Project the first frame and ask the children how many kinds of flowers they see and how many different colors they see in the flowers. (Frames 2 to 8 contain only one kind of flower, with significant variation in color.) Ask the children which color is found most often in a given frame; they can count the number of flowers of each color. On another day, show frames 9 to 14, each of which includes more than one kind of flower. Encourage the children to discuss differences in the size, shape, and color of the flowers. In some pictures the flowers are various shades of one color; you might discuss shading with the children if they are interested. Frame 15 emphasizes size differences only. Use this and other frames when discussing size (Part Six).

Flower walks. Take the children on flower walks around the school or in a park. They can hunt for a specific color, multicolored flowers, or possibly one or more of the flowers seen in the filmstrip.

LESSON PLAN #7 COLOR

Title: Color Windows

Source: SCIS, Beginnings, p. 32 (next page)

Content Objective(s): The children will be able to notice and observe color changes with the masks.

Process Objective(s):
Observing #1, 2
Inferring #1, 2
Classifying #1
Communicating, verbally #1

Equipment:
Group 6 to 8
2 yellow colored masks
2 red
2 blue
2 green
(Box C)
Parquetry blocks or color chips (container 1-4)
For teacher-2 plain masks (Box C)
  colored cellophane
  large corregated box
  crayons
  paint
  chalk (colored)
  craypas
  paper

Procedure/Activities/Trips: Set out various colored objects, have children examine.

1. Give out masks have children examine at the objects while wearing masks.

   Discuss

2. Take a group outside use masks to look at the world.
3. Given paints and crayons or colored chalk or have them draw what they saw - a tree - clue.

How does this involve the local environment?

They will be looking at nature to observe the changes in nature as seen through the masks.

8 Color Windows

TEACHING MATERIALS

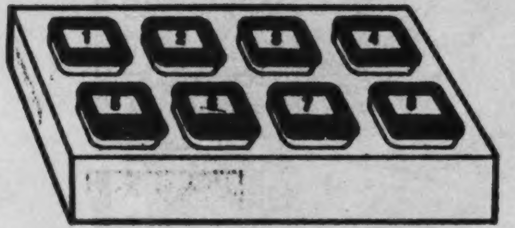
For a group of six to eight children:

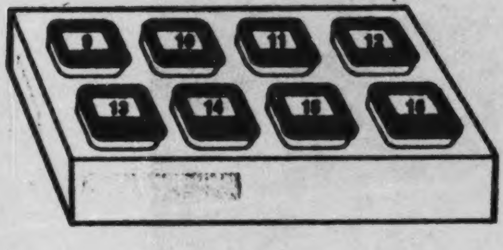
- 2 yellow color masks (Box C)
- 2 red color masks (Box C)
- 2 blue color masks (Box C)
- 2 green color masks (Box C)
- parquetry blocks or color chips (Containers 1, 2, 3, and 14)
- felt pieces (Container 6)

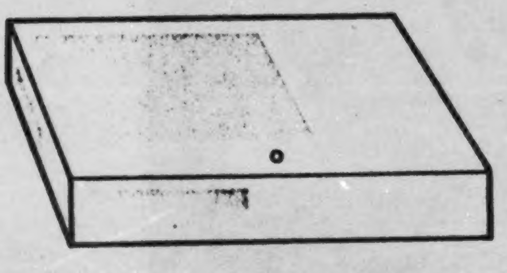
For the teacher:

- 2 plain masks (Box C)
- colored cellophane*
- large corrugated box*

* provided by the teacher







ADVANCE PREPARATION

Set a number of brightly colored objects, including the felt pieces, around the room. Cut the rubber string into segments and tie one piece to each mask. Snap in the appropriate colored lenses.

TEACHING SUGGESTIONS

Observing objects through colored cellophane gives children further insight into what is meant by color. Give each child a mask and invite pairs of children with different colored masks to observe, compare, and discuss the colors of the objects; or give one mask to a pair of children and let them take turns describing to each other the colors of objects as seen through the mask. In either case, encourage discussions between partners and among the group members. You can use cellophane in other colors to make additional masks, or you can combine lenses of two colors in one of the color masks. Such combinations prove interesting to many children. When viewed through the masks, the color of rough-textured objects will change more than the color of smooth objects.

LESSON PLAN #8	COLOR
Title:	Sorting Color Chips
Source:	SCIS, Beginnings, p. 31 (next page)
Content Objective(s):	The children will be able to group and compare objects according to color.
Process Objective(s):	Observing #1, 2 Inferring #1 Classifying #1, 2 Communicating, verbally #1
Equipment:	1 cardboard tray (Box C) 10 to 15 color chips (container 14) Poster paints, or finger paint or Tempera
Procedure/Activities/Trips:	1. Give each child a tray of color chips--have them sort by color. 2. Have them stack, going from dark to light. 3. Put out paint—have children experiment.
Key Questions:	How did you get that color? What would happen if? 4. Have children make a color wheel. Have each put primary colors on the wheel. Mix them together to get brown in the center. Provide each with a cardboard circle and tempera paint. 5. Try experimenting with finger paint—sometimes it is easier to see new colors coming.

7 Sorting Color Chips

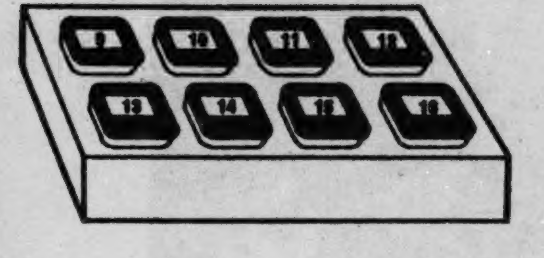
TEACHING MATERIALS

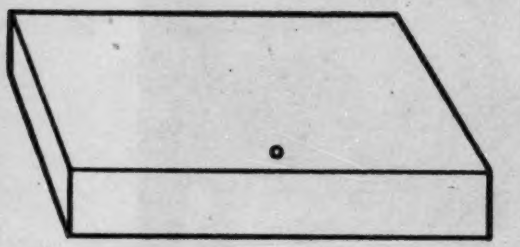
For each of four to six children:

- 1 cardboard tray (Box C)
- 10–15 color chips (Container 14)

For the group:

- poster paints or tempera (provided by the teacher)





ADVANCE PREPARATION

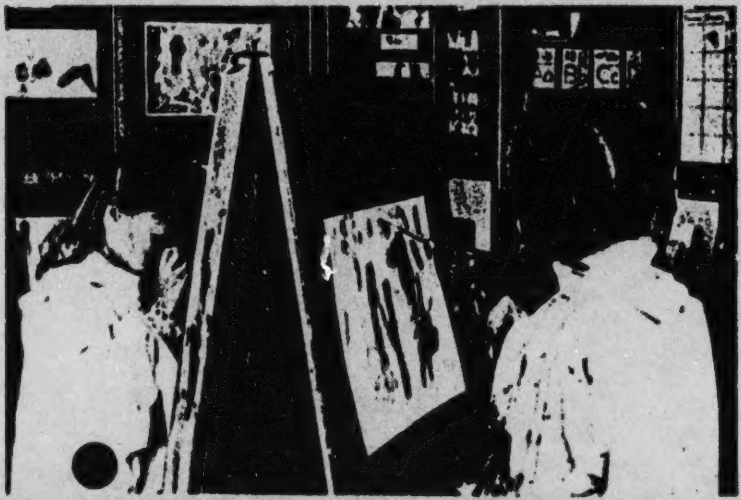
Divide the color chips so that each child receives chips of various colors and shades.

TEACHING SUGGESTIONS

Give each child a tray of color chips and ask him to sort these by color. Then ask him to select one color pile and to put the chips in order from light to dark. Two or more children can combine their collections when doing this. Some children will have difficulty carrying out this activity. Suggest that these children simply sort chips of one color into light and dark piles. Many other activities are possible with the color chips, such as counting and making designs.

Encourage discussion among the children, emphasizing the difference between variation in shade and variation in color. You might also invite children to look for differences in shade of color in other objects around the room or elsewhere in and around the school.

Making shades of a color. Invite the children to produce different shades of a given color, using tempera or poster paints. If necessary, show them how white can be used to lighten a color and black can be used to darken it. Challenge children to produce as many shades of a color as possible. Provide many colors of paint so they can fully explore the fun of color mixing. Suggest that they produce one-color designs that differ in shade only. Display the results and encourage children to talk about them.



LESSON PLAN #9 COLOR

Title: Totem Pole Pictures

Source: SCIS, Beginnings, p. 34 (next page)

Content Objective(s): The children will be able to identify and locate a specific color.

Process Objective(s):
Observing #1, 2
Inferring #1
Classifying #1, 2
Communicating, verbally #1

Equipment:
1 set 5 Totem Pole Pictures (Box C)
Filmstrip color (Box C)

Procedure/Activities/Trips: Film on "Color" last 5 frames are the totem pictures found in the kit. Have pictures in room.

1. How pictures, ask what they think they are—talk about totem poles.

2. Have them locate colors on the totem.

3. Find the totem, have child give clue, totem with white fish near bottom. The others discover which totem he is discussing.

4. Could use film.

   F 1474 "Creating With Color" - 11 minutes

   F 1478 "Colors For Beginners" - 11 minutes

9 Totem Pole Pictures

TEACHING MATERIALS

For a group of six to eight children:

- 1 set of 5 totem pole pictures (Box C)
  filmstrip, "Color" (Box C)

ADVANCE PREPARATION

Display the totem pole pictures in the room a day or two before using this activity. The same totem pole pictures also appear in the last five frames on the filmstrip of flower pictures. Any of the activities described can be carried out using the filmstrip.

TEACHING SUGGESTIONS

Introducing the pictures. Gather the children around you and hold up one of the totem pole pictures; ask them what they think is shown. Some children may know it is a totem pole; others will identify the faces, designs, or animals depicted. Tell the children a little about Indian totem poles and if you like, read them a story about Indians and totem poles.

Reference objects. On another day, ask children to describe where certain colors are located on the different totem pole pictures. This experience in locating colors (for example: the bird near the top is red) will give the children experience in using reference objects. You might suggest that the children play a game. Invite one child to give a clue, such as "I am thinking of a totem pole having a white fish near the bottom," and ask the other children to find the appropriate totem pole. Depending on how specific the clue is, there may be more than one appropriate answer. If necessary, get the game under way by giving the first few clues yourself.

LESSON PLAN #10 COLOR

Title: Color - Evaluation

Source: SCIS, Beginnings, p. 35 (next page)

Content Objective(s): The children will, upon completion of this unit, be able to do all previously stated objectives.

1. Identify various colors.
2. Name various colors.
3. Compare objects according to sameness and differences in color.
4. Describe objects according to sameness and differences according to color.
5. Group objects according to color.

Process Objective(s):
Observing #1, 2, 3
Inferring #1
Classifying #1, 2
Communicating, verbally #1

Equipment:
10 to 12 parquetry stickers (containers 7-8)
Collection of colorful objects (from kit and classroom)
1 construction paper strip (2" x 11")
For teachers - scissors

10 Evaluation—Color

TEACHING MATERIALS

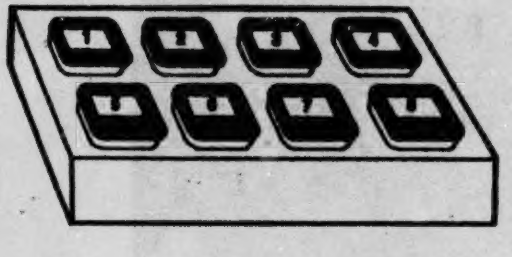
For each of six to eight children:

- 10–12 parquetry stickers (Containers 7 and 8)
- collection of colorful objects (from kit and classroom)
- 1 construction-paper strip (2" x 11")*

For the teacher:

- scissors*

* provided by the teacher



ADVANCE PREPARATION

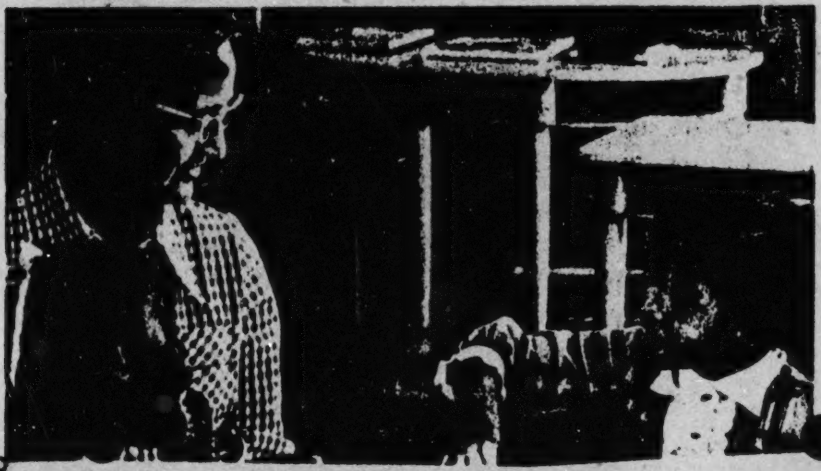
Divide the parquetry stickers into groups so that each child receives stickers of various colors and shapes. Cut construction paper lengthwise into strips two inches wide. Assemble collections of colorful objects such as buttons or beads.

TEACHING SUGGESTIONS

Give each child an assortment of stickers and a strip of construction paper. In response to your directions, children are to glue stickers on the strips from left to right. (This activity is also an informal introduction to sequencing from left to right.) Help those children who need assistance place the first sticker correctly. To continue the activity, simply call out, or have a child call out, the name of a color to be placed next to the previous sticker.

By reviewing each child's work, you can quickly identify who is still having difficulty recognizing colors. Provide these children with further experiences identifying objects by color.

Grouping by color. To evaluate a child's ability to group by color, provide him with a collection of colorful objects and ask him to either (1) put all the objects of each color in a separate pile or (2) find all the red (or other color) ones. The first approach is difficult for some children. From this activity, you will gather feedback regarding which children will need help to carry out the grouping activities in the rest of the program. In future activities you might let these pupils work with children who understand sorting.



SHAPE

FOREWORD

Most of these science lessons are intended to be used with a small group of children (not more than eight) using a maximum of thirty minutes per lesson. If your teaching style includes the use of centers, the science lesson could be used in a center with the teacher or other responsible person as the resource person. If your teaching style is more traditional, you could set aside 30 minutes on successive days to work with each group while the other children have free time. You would need to have a parent helper, aide, or older student in the classroom to assist those children not involved in the science lesson. Children should be aware that each will have a turn with the lesson activities.

LESSON PLAN #1 SHAPE

Title: Shape of Classroom Objects

Source: SCIS, Beginnings, p. 37 (next page)

Content Objective(s): The children will be able to identify and name various shapes.

Process Objective(s): Observing #1
Communicating, verbally

Equipment: Classroom objects
Check rug
Window
Table
Toys of various shapes

Procedure/Activities/Trips: Call children's attention to various shapes in the classroom.

1. Have children find objects of specific shapes in the classroom.
2. Take the class on a shape-finding hunt around the school to find as many circles, triangles as they can.
3. Record-Basic Skills through Music, Vol. 2 Side A. Band #4 One shape, 3 shapes if available.
4. Good photo book - "Circles, Triangles, Squares" by Tana Hodan

11 Shape of Classroom Objects

ADVANCE PREPARATION

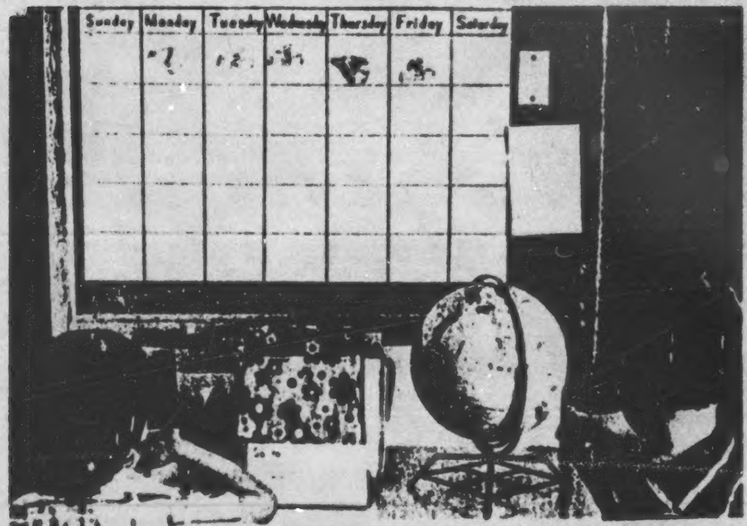
You may conduct these activities either with small groups or with the whole class.

TEACHING SUGGESTIONS

Classroom shapes. Call the children's attention to different shapes in the classroom, such as square floor tiles, round clocks, and rectangular windows. Then have a shape-finding hunt. Ask children to find objects of specific shapes in the room.

Properties. When you feel your class is ready, have the children look for objects that you describe by shape and another property. An example would be "Find a red, square object." It is difficult for some children to identify objects by more than one property. If you find this to be the case, do not press the issue; simply provide a variety of interesting experiences and encourage your pupils to continue identifying objects by properties.

Shapes in the outdoors. Take the class on a walk around the school or on a field trip, challenging the children to find as many circles, rectangles, triangles, and other shapes as they can. They might consider the shapes of lawns, flower gardens, and parts of buildings. Encourage children to pick out simple shapes which form more intricately shaped objects.



LESSON PLAN #2 SHAPE

Title: Outlining and Drawing Shapes

Source: SCIS, Beginnings, p. 38 (next page)

Content Objective(s): Children will be able to trace and draw shapes.

Process Objective(s): Observing

Equipment:
Cutouts
Template
Paper

Procedure/Activities/Trips:

1. Give children cutouts. Have them trace these shapes. Give children a piece of paper and have them trace the shape.
2. Have them draw the same shapes freehand.
3. Rhythmic Record, Creative Movement Rhythm #AR533 - Side 2, Band 4 - "How Many Ways" if available.

   (Children draw shapes in air, as record informs them to).

12 Outlining and Drawing Shapes

TEACHING MATERIALS

For each of six to eight children:

drawing paper*
crayons*

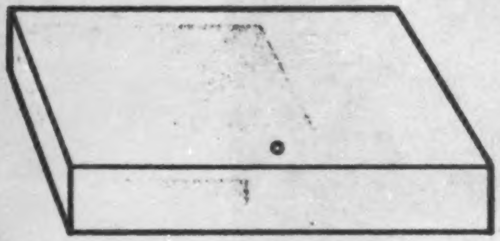
For the group:

2 sets of cutouts and frames of various shapes (Box C)
4 or 5 pieces of fruit (banana, pear, orange, apple, etc.)*
shape puzzles*

For the teacher:

sheets of heavy construction paper*
scissors*

* provided by the teacher



ADVANCE PREPARATION

Obtain some pieces of fruit (real or plastic) for the first activity.

TEACHING SUGGESTIONS

Outlining. Display the fruit and invite the children to observe and touch it. Draw an outline of each kind of fruit on the chalkboard and ask the children to describe the shapes you have drawn. This activity encourages children to use descriptive language and is a valuable addition to the language-development program in your classroom. The children may wish to draw their own outlines of the fruit.

Shape puzzles. Many kindergarten classrooms have shape puzzles in which children place variously shaped blocks into correspondingly shaped holes. Invite the children to use these puzzles while they are blindfolded. Suggest that they find the correct piece by running their fingers around one of the holes in the puzzle board to feel its shape, then finding a puzzle piece that feels the same. This tactile experience will reinforce the children's discrimination of the differences among shapes. Encourage them to discuss how the shapes feel. Ask children to feel and count the number of corners and sides of a shape while they are blindfolded. The children's description of the circle should prove most interesting. Use the cutouts and frames in the same way.

Freehand drawings. Give each child a piece of paper and a cutout or a frame of one shape and tell him to trace the shape. When the children have finished, ask them to draw the same shapes freehand. Repeat the activity so that each child works with each shape from the kit as well as with any other shapes you want to cut out. As always, encourage the children to talk about their work, providing words when needed. It is difficult for kindergarten children to draw freehand shapes fairly accurately. Be patient and provide lots of practice. As an incentive suggest that the children color and cut out the shapes they draw.

Retention game. Draw a large shape on paper. Let the children observe it for a few seconds. Then remove it and ask the group to describe the shape they saw or to draw it. Progress from simple geometric shapes to complex ones or to superimposed ones, for example, a square within a circle.

LESSON PLAN #3 SHAPE

Title: Describing Parquetry Blocks by Shape

Source: SCIS, p. 39 (next page)

Content Objective(s): Children will be able to form patterns using different shapes.

Children will be able to compare two shapes.

Children will be able to tell likenesses and differences in shapes.

Process Objective(s): Observing

Equipment: Block pattern sheets

Procedure/Activities/Trips:

1. Place 6 to 8 blocks, same color on tray for each child. (Have pattern sheet ready).
2. Have children count number of corners on each shape.
3. Have children compare two shapes. Discuss differences and similarities.
4. Have children trace around each block.
5. Have children color the shapes.
6. Turn paper over and draw shapes freehand.
7. Give each child the same block pattern.
8. Place appropriate block to cover each shape, on pattern sheet.
9. Discuss differences in patterns.

13 Describing Parquetry Blocks by Shape

TEACHING MATERIALS

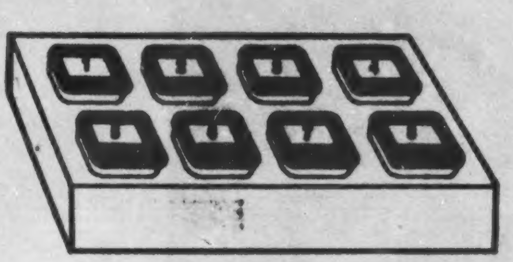
For each of six to eight children:

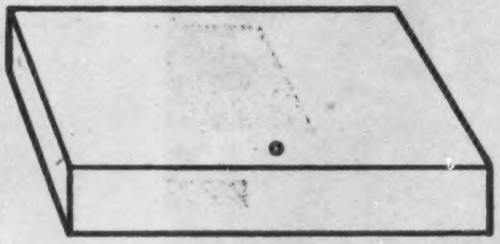
1 cardboard tray (Box C)
6–8 parquetry blocks (Containers 1, 2, and 3)
1 set of block pattern sheets*
1 sheet of drawing paper*
crayons*

For the teacher:

parquetry stickers (Containers 7 and 8)
spirit master for block pattern sheet (Box C)

* provided by the teacher





ADVANCE PREPARATION

Place six to eight parquetry blocks, all of the same color, on a tray for each child. Run off the block pattern sheets from the spirit master so that copies of each pattern are available for each child.

TEACHING SUGGESTIONS

Describing shapes. Ask the children to hold up their square blocks. Then ask them to count the number of sides and corners. Repeat this procedure using the other shapes. Then have the children compare two shapes, for example, a triangle and a diamond. Discuss with them similarities and differences between the shapes.

Tracing shapes. To help the children better understand the idea of sides and corners, have them trace around each parquetry block. Then suggest that they color the shapes. When the children have finished, have them turn their papers over and draw the shapes freehand. Those who can do this have a good understanding of the shapes and have well-developed small-muscle coordination.

Parquetry patterns. Give each child in the group the same block pattern sheet and a tray of blocks. Ask them to find appropriate blocks to cover each shape pictured on the pattern sheet. Children who have trouble matching shapes can get help from their peers or from you during this activity. Encourage children to discuss differences in the patterns produced, as they will probably vary in color even though the blocks used are the same shape. For a more difficult task, you can ask the children to complete a pattern using a block of a given color for a given shape (red for squares, blue for triangles, etc.). Repeat these activities using other patterns. Giving each child a different pattern and letting him decide what colors to use can lead to interesting discussions.

Colored block patterns. By gluing appropriate parquetry stickers onto one or more of the block pattern sheets, you can produce interesting patterns. Display these and encourage interested children to reproduce the same pattern or a new one using blocks of the same shapes but different colors.

LESSON PLAN #4	**SHAPE**
Title:	Stringing Beads by Shape
Source:	SCIS, Beginnings, p. 40 (next page)
Content Objective(s):	Children will be able to group objects according to shape.
Process Objective(s):	Observing Classifying #1, 2
Equipment:	10 to 15 beads for each child Lace Cardboard Tray for each child
Procedure/Activities/Trips:	Teacher string some beads to form a simple pattern such as square, circle, square, circle etc. 1. Children will copy the teacher's pattern. 2. Children will form patterns with two properties: color and shape. 3. Sound filmstrip--Shape: A Circle is Never a Square.

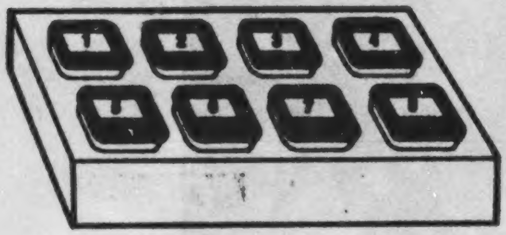
14 Stringing Beads by Shape

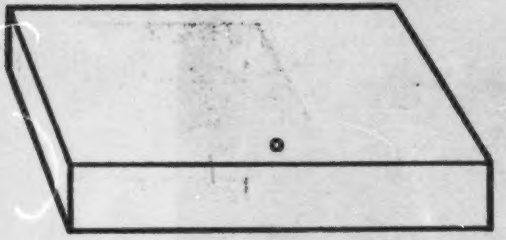
TEACHING MATERIALS

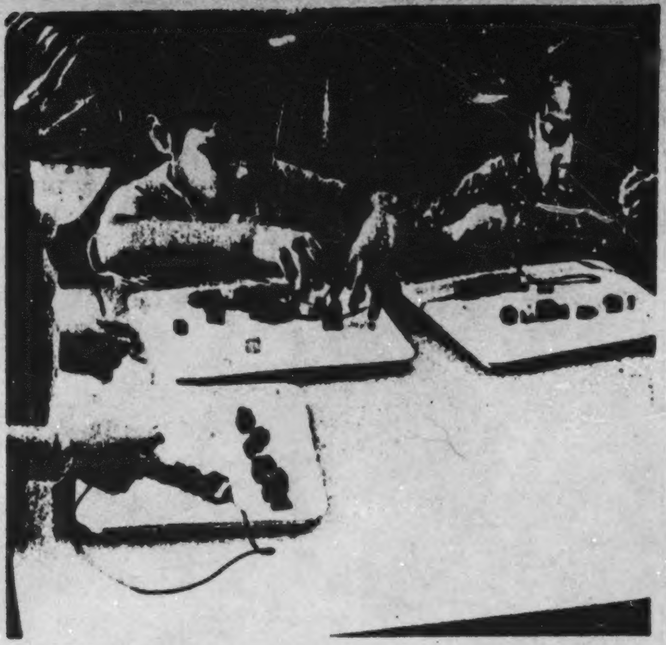
For each of six to eight children:
- 1 cardboard tray (Box C)
- 10–15 beads (Containers 4 and 5)
- 1 shoelace (Container 5)

For the teacher:
- 6–8 beads (Containers 4 and 5)
- 1 shoelace (Container 5)
- 1 set of bead pattern cards (Box C)
- felt-tip pens or crayons*
- index cards*

* provided by the teacher







ADVANCE PREPARATION

Put ten to fifteen beads of various colors and shapes onto a tray for each child. Knot one end of each shoelace.

TEACHING SUGGESTIONS

String some beads to form a simple pattern of geometric shapes such as square, circle, square, circle, and so on. Invite the children to copy your model. A child can check his string of beads with yours, finding and correcting his own errors. Then, if you like, introduce other shapes and gradually make the patterns more complex. Children can also challenge others to reproduce their patterns.

Two-property patterns. You might wish to emphasize bead patterns in which children have to select beads with both the right color and the right shape. Some may already have done so, while others have simply matched shapes and disregarded color.

Pattern cards. Display the set of pattern cards. There are both simple and complex patterns; some vary only in shape, others vary both in shape and in color. If you like, produce on index cards some patterns that cannot be copied with the beads provided. Children can use the cards independently and can describe to you or an aide what they have done. How your pupils handle the patterns that cannot be constructed with the bead collection provided will prove most interesting. Some may find ways of using other objects to complete a pattern. Encourage the children to discuss their problems.

LESSON PLAN #5 SHAPE

Title: Shapes on Flannel Board

Source: SCIS, Beginnings, p. 42 (next page)

Content Objective(s): Children will be able to compare likenesses and differences.

Process Objective(s): Inferring #2.

Equipment:
Flannel Board
Felt pieces

Procedure/Activities/Trips:

1. Have children select felt pieces, at random and place on flannel board.
2. Children match shapes. Children connect and match shapes using felt strips.
3. Children use wipe-off cards matching shapes.

16 Shapes on Flannel Boards

TEACHING MATERIALS

For each of six to eight children:

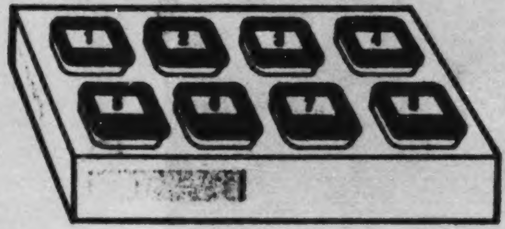
- 1 small flannel board (Box C)
- 8–10 felt pieces (Container 9)

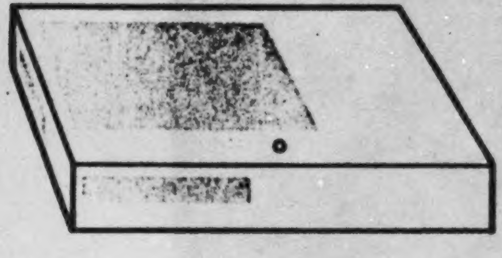
For the group:

- large flannel board (Box C)
- 5 or 6 felt strips (Container 8)

For the teacher:

- 8–10 felt pieces (Container 9)





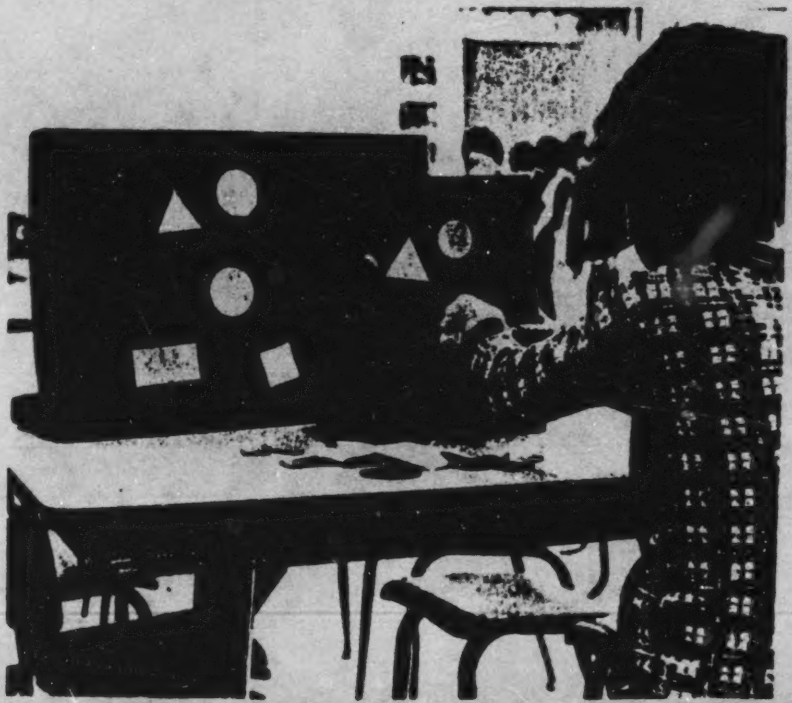
ADVANCE PREPARATION

Assemble sets of felt pieces that vary in shape but are of the same color. Set up the large flannel board, using the printed instructions.

TEACHING SUGGESTIONS

Selecting shapes. Give each child a small flannel board and a collection of felt pieces. Select and place a felt shape on the large flannel board and ask each child to select a felt piece with the same shape and to place it on his board. Children can carry out this activity independently with one child acting as leader. As an interesting variation, ask each child to select a shape different from everyone else's.

Matching shapes. Place a piece of felt on the large flannel board and invite a child to pick a matching felt piece from his assortment. Ask him to explain his choice. Later, put up three or four felt pieces of different shapes on one half of the board; then place matching pieces in a different order on the other side of the board. Now ask a child or several children to connect the matching pieces with felt strips.



LESSON PLAN #6 SHAPE

Title: Comparing Shapes

Source: SCIS, p. 43 Beginnings, (next page)

Content Objective(s): Children will be able to compare shapes.

Process Objective(s): Communicating, verbally

Equipment: Shape - outline

Procedure/Activities/Trips:

1. Have children draw lines from the shapes in one column to those that match in the other column.
2. Have them color the pictures after.
3. Discuss the children's work in a group discussion.

17 Comparing Shapes

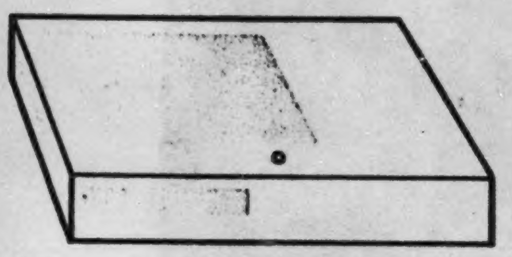
TEACHING MATERIALS

For each of six to eight children:

1 shape-outline page*
crayons*

For the teacher:

shape-outline spirit master (Box C)
* provided by the teacher

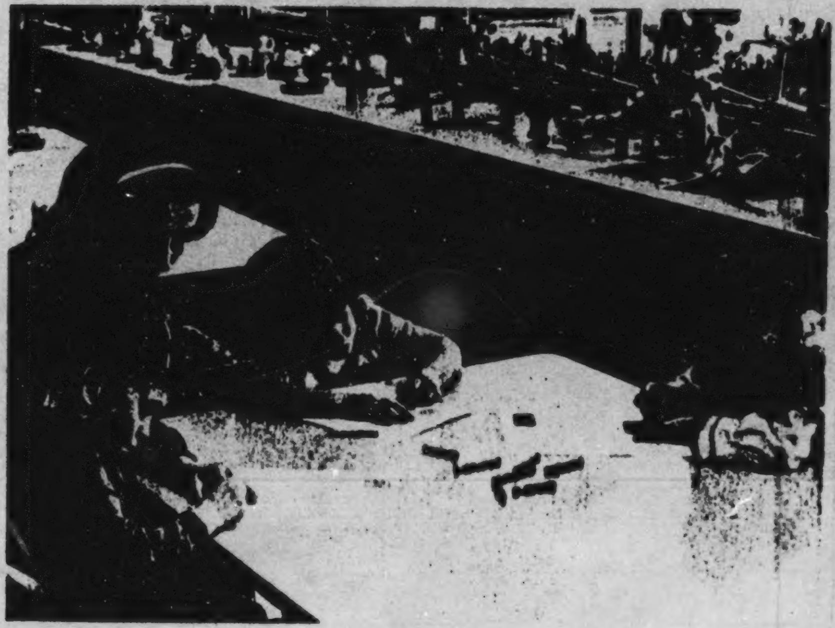


ADVANCE PREPARATION

Duplicate the required number of pages from the spirit master.

TEACHING SUGGESTIONS

Distribute the pages and ask the children to draw lines from the shapes in one column to those that match in the other column. When they have completed the activity, suggest that they color their pictures. Finally, discuss the children's work in a group discussion. Encourage them to describe the shapes by property rather than simply name them. You can prepare additional pages on which you vary the size of the shapes in each column or include certain shapes in one column and not in the other.



LESSON PLAN #7 SHAPE

Title: Evaluation: Shape

Source: SCIS, p. 45 Beginnings (next page)

Content Objective(s): Children will review the shape by identifying, naming and distinquishing.

Process Objective(s):
Classifying
Observing #1
Communicating

Equipment:
Parquetry stickers
Construction paper

Procedure/Activities/Trips:

1. Children will glue various shapes stickers on paper strips from left to right following teacher's direction.
2. Child may call out the name of a shape to be placed next to the previous sticker.
3. Children will make shapes book.

   Movie: The Shapes We Live With

18 Evaluation—Shape

TEACHING MATERIALS

For each of six to eight children:

10–12 parquetry stickers (Containers 7 and 8)
1 construction-paper strip (2" x 11")*

For the teacher:

scissors*

* provided by the teacher

ADVANCE PREPARATION

Divide the parquetry stickers so that each child receives stickers of various shapes. Cut construction paper lengthwise into strips two inches wide.

TEACHING SUGGESTIONS

Give each child an assortment of stickers and a strip of construction paper. Children are to glue variously shaped stickers on paper strips from left to right, following your directions. Help children who have difficulty placing the first sticker correctly. Then call out, or have a child call out, the name of a shape to be placed next to the previous sticker. By looking at each child's work, you can quickly spot those children who still have trouble recognizing various shapes. This activity is also good practice for children learning the left-to-right sequence.

SIZE

FOREWORD

Most of these science lessons are intended to be used with a small group of children (not more than eight) using a maximum of thirty minutes per lesson. If your teaching style includes the use of centers, the science lesson could be used in a center with the teacher or other responsible person as the resource person. If your teaching style is more traditional, you could set aside 30 minutes on successive days to work with each group while the other children have free time. You would need to have a parent helper, aide, or older student in the classroom to assist those children not involved in the science lesson. Children should be aware that each will have a turn with the lesson activities.

LESSON PLAN #1 SIZE

Title: Size: Size of Objects in the Classroom

Source: SCIS, Beginnings, p. 67 (see next page)

Content Objective(s): To compare and describe objects by size.

Process Objective(s):
Observing #1, 2, 3
Inferring #1
Classifying #1
Communicating, verbally #1

Equipment:
Filmstrip projector
Trays
Felt
Chalk
Crayons
Filmstrip - What's Big, What's Little (C-25) (if available)

Procedure/Activities/Trips: Introduce Topic

1. Show filmstrip on "Size"
2. Ask the children to explore the classroom looking for objects in the room. The largest, smallest etc.

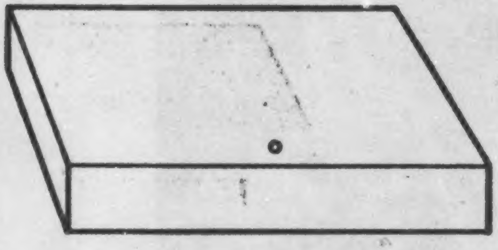
Serial Ordering. Give children a group of objects have them place them in order of size (serial ordering) ie, largest to smallest; smallest to largest.

34 Size of Classroom Objects

TEACHING MATERIALS

For a group of six to eight children:

3 cardboard trays (Box C)
3 or 4 felt pieces (Container 6)
3 or 4 pieces of chalk*
3 or 4 crayons*
* provided by the teacher



ADVANCE PREPARATION

Place variously sized pieces of chalk on a tray. Use additional trays for felt pieces and crayons.

TEACHING SUGGESTIONS

Place the trays on a table and invite the children to observe the objects on each tray and to describe them to the rest of the group. If the children do not mention size, point out the differences among the objects on any one tray. Invite children to look for the smallest or largest object on each tray. You can also ask individuals to find objects larger than, smaller than, or the same size as one you select from a tray.

Size hunt. Ask children to point to the longest table, the shortest crayon, the largest window, etc., in the room. Or ask children to compare the sizes of two objects or parts of objects in the room. For example, ask them to find the smallest circle and the largest square or two blue objects that differ in size.

LESSON PLAN #2 SIZE

Title: Size: Size in Pictures

Source: SCIS, Beginnings, p. 70 (next page)

Content Objective(s): Children will observe and compare likenesses and differences in objects in size.

Process Objective(s):
Observing #1, 2, 3
Inferring #1
Communicating, verbally #1
Classifying #1

Equipment:
Pictures from magazines or newspapers
Photographs, or make a ditto

Procedure/Activities/Trips:

1. With large group discuss the pictures (whatever it may be). Talk about its size in relationship to other things in the picture.
2. Circle the picture. Pass out pictures magazines and newspapers and photographs. Talk about the way things look in size in a picture and compare it to the object in reality.
3. Circle the picture. Pass out pictures to each child. Ask them to circle the largest house, the smallest ball etc.
4. To find appropriate magazine pictures could be very time consuming for the teacher. Would a ditto type worksheet accomplish the same objective?

37 Size in Pictures

TEACHING MATERIALS

For each of six to eight children:

1 magazine or newspaper picture*
crayon*

* provided by the teacher

ADVANCE PREPARATION

Select magazine and newspaper pictures that show the same or similar objects in different sizes.

TEACHING SUGGESTIONS

Distribute a picture to each child. Ask children to circle the smallest person, the largest ball, or a middle-sized house in their pictures. Alternatively, circle one or more objects in a picture and ask children to find larger or smaller ones of the same kind in other pictures. Ask the children to explain their choices to you and the group. Discuss with them why they think an object appears different in size in different pictures. This activity works best when you organize it so that you can first discuss each child's picture with him or her.

LESSON PLAN #3 SIZE

Title: Size: Size of Children

Source: SCIS, Beginnings, p. 68 (next page)

Content Objective(s): To be able to compare various sizes.

Process Objective(s):
Observing #1, 2, 3
Inferring #1
Classifying #1
Communicating, verbally #1
Graphically #1, 2

Equipment:
Long piece of newspaper or news-print
Crayons
Thin strip of paper
Plaster of paris or clay

Procedure/Activities/Trips: Height. Hang paper strip on wall.

1. Use one color crayon for boys another for girls. Have them come up one at a time, measure each child. Make appropriate color and child's name. You can also use a strip of paper per child. Hang from the floor up the wall to make a realistic true to life graph.

2. Hands and Feet. Have children trace around their hands and feet. Have them compare their own hands and feet and their feet and hands to someone elses.

3. Hand and foot prints. Children can make hand and feet prints by using plaster of paris clay or ink pads or tempera paint.

35

Size of Children

TEACHING MATERIALS

For each of six to eight children:

- 2 sheets of newsprint or thin paper*
- crayons*

For the group:

- 1 long paper strip or roll of adding machine tape*
- plaster of paris or clay*

* provided by the teacher

ADVANCE PREPARATION

Consider whether any child in your room would be embarrassed by the activities described. If a child is unusually large or small, you may not want to highlight this difference. In that case, do not carry out these activities. The children should remove their shoes before measurements are taken.

TEACHING SUGGESTIONS

Height. Hang the paper strip or tape on the wall so that each child's height can be recorded on it. Use one color crayon for the boys' heights and a different one for the girls'. Each child can put his initials next to his mark. When all the children's heights have been recorded, ask questions such as, "How many children are taller than Linda?" "Shorter than Carlos?" in a group discussion. You might prefer to cut a strip of paper (adding machine tape) the height of each child and tape the strips to a wall, starting each one at the floor. When you finish, you will have a graph showing the heights of the children in the class.

Hands and feet. Children enjoy outlining their hands and feet and comparing their sizes. Distribute two sheets of paper to each child. Tell him to place one hand, fingers spread, on the paper and to draw an outline around it. When he finishes, invite him to take off a shoe and sock and outline his foot.

Each child can compare these outlines to decide whether his hand is bigger than his foot or how his hand or foot compares to hands and feet of his classmates. Ask, "Does the person with the largest hand also have the largest foot?" Let the children explore and discuss this question. Some children will have trouble deciding which is bigger, because a hand spread apart is wider but not as long as a foot. Encourage the children to discuss these size differences, as discussion will help develop their language abilities. Children can accurately compare the size of their hands or feet with those of their classmates by holding two outlines against a window pane, one placed over the other.

In a variation of the above activity, suggest that children obtain outlines of the hands and feet of members of their families. They can bring the outlines to school, describe the composition of their families, and let the other children guess who made each outline.

Hand and foot prints. Children can make prints of their hands or feet in plaster of paris or clay, decorate them, and take them home. As the children grow, they will enjoy seeing how much bigger their hands and feet become.

LESSON PLAN #4	SIZE
Title:	Size: Using Magnifiers
Source:	SCIS, Beginnings, p. 69 (next page)
Content Objective(s):	The children will be able to compare size and observe sizes and (observe) changes in objects.
Process Objective(s):	Observing #1, 2, 3 Inferring #1 Classifying #1 Communicating, verbally #1
Equipment:	Various objects-small shells, colored chips, clothes pins, buttons Magnifiers Film projector Filmstrip: Comparing Sizes (or film F-2932, 10 mins. "Big and Small")
Procedure/Activities/Trips:	1. Allow children to discover magnifiers and what they can do. Large magnifiers. 2. Have them examine various objects without magnifiers. Then with. Discuss and compare. 3. On another day have the children use small magnifiers. Show them how to use them. Encourage them to examine several objects. 4. Have them compare and describe an object viewed with and without the magnifier. 5. Show film strip - Comparing Sizes
Definition of Concept(s):	Magnification
Key Questions:	How is it the same? How is it different from before? How is it different? How is it the same as it was before?

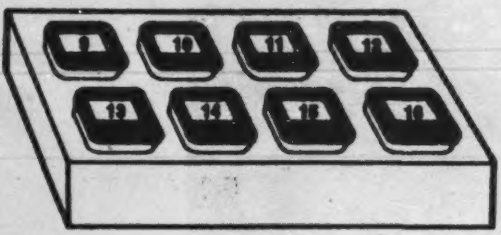
36

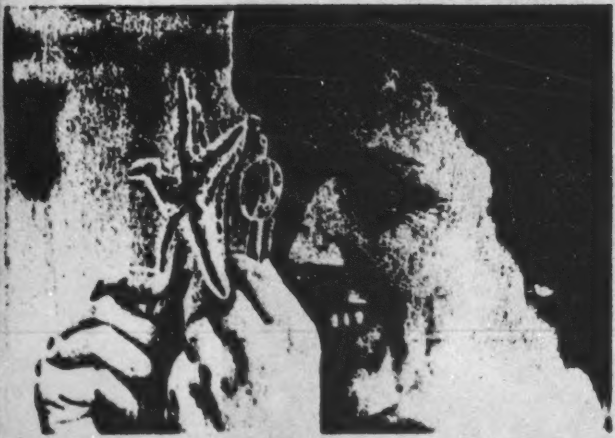
Using Magnifiers

TEACHING MATERIALS

For each of six to eight children:
    1 magnifier (Container 12)

For the group:
    large magnifier on a stand*
    collection of objects*
    * provided by the teacher





ADVANCE PREPARATION

Collect some objects to look at under the magnifiers, such as rocks, wool, feathers, and grainy wood. A large magnifier on a stand would be most valuable for use in this activity.

TEACHING SUGGESTIONS

If a large magnifier is available, place one or two objects under it and encourage children to look at the objects and to discuss what they see. Let them look through the magnifier on several occasions. Change the objects frequently.

Using small magnifiers. On another day, give the children the small magnifiers and some new objects to observe. Show the children how to use a magnifier by holding the lens up to your eye and moving the object back and forth until it comes into focus. Encourage them to examine many objects in the room and outdoors. Have them compare and describe an object viewed with and without the magnifier. "In what ways does it look like it did before?" "In what ways does it look different?" Point out that while they can see more detail through the magnifier, they may not be able to see the whole object. The children will enjoy taking the magnifiers on field trips.

LESSON PLAN #5 SIZE

Title: Size: Cuisenaire Rods or Strips

Source: Developed by teacher: Dorothy Gillam

Content Objective(s): To be able to compare sizes of rods to each other and to other objects.

Process Objective(s):

Observing #1, 2
Inferring #1
Classifying #1, 2
Communicating verbally #1

Equipment:
(Cuisenaire strips are available from Addison-Wesley--could be stored in small Zip-lock bags)

Cuisenaire rods or strips set for each child
Crayons, paper clips, buttons, square tiles

Procedure/Activities/Trips:

1. Allow children to play with rods a short time.
2. Have children sort rods by size.
3. Ask children to find as many rods as they can which are shorter than the black, longer than the black, etc. Proceed in a like manner using different lengths of rods.
4. Give each child a crayon, paperclip, button, and tile. Ask child to find all the rods that are shorter than the crayon; longer than crayon; bigger than, littler than.
5. Are there any rods that are the same length as each item?

Vocabulary Words:

Longer, Shorter
Bigger, Littler (Larger/smaller)
Same as

LESSON PLAN #6

Title: Evaluation: Size

Source: SCIS, Beginnings, p. 71 (next page)

Content Objective(s): The children will upon completion of the unit be able to perform all previously stated objectives with 90 to 100 degrees accuracy.

Process Objective(s):
Inferring #1
Communicating, verbally #1
Classifying #1
Observing #1, 2, 3

Equipment:
Film projector
Filmstrip
Shells or other objects for serial ordering according to size (buttons, chips, mini animals etc.

Procedure/Activities/Trips:

1. Serial Ordering. Given a group of objects such as shells, nuts (as in nuts and bolts or washers). Have the children place them in order of largest to smallest then smallest to largest.

2. Given objects the children will compare and describe them according to size. Usually terms such as large, larger, largest, small, smaller, smallest.

3. Re-show filmstrip on "Size" if available. Discuss the film as it is shown asking various questions. Make sure they use words like large, small, etc.

What's Big, What's Little

38 Evaluation—Size

TEACHING MATERIALS

For each of six to eight children:

1 size-outline page*
crayon*

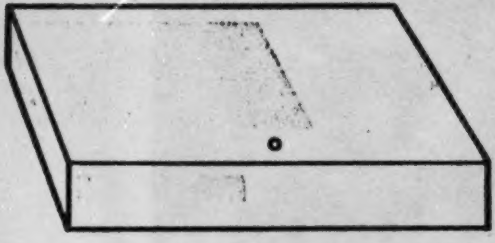
For the group:

flannel board (Box C)
collection of felt shapes (Container 6)

For the teacher:

size-outline spirit master (Box C)

* provided by the teacher



ADVANCE PREPARATION

Duplicate the required number of pages from the spirit master. Use this activity after the children have had extensive experience describing objects by size. Set up the flannel board and put one piece from your collection on it.

TEACHING SUGGESTIONS

Size-outline page. Distribute a duplicated page to each child. Tell children to color, according to your directions, the smallest circle, the smaller square, and so on. After the children have had some experience, make your directions more complex, such as "Color the smallest (or largest) object on the page." By reviewing an individual's work, you can gather feedback about his understanding of size.

Flannel board. As another way of obtaining feedback, call a child to the flannel board and ask him to find a felt piece larger, smaller, or the same size as the one on the board or to select the largest or smallest felt piece from your collection.

POSITION

FOREWORD

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LESSON PLAN #1 POSITION

Title: Position of Classroom Objects

Source: SCIS, Beginnings, p. 80-81 (next page)

Content Objective(s): Children will be able to describe the position of an object in relation to other objects.

Process Objective(s): Communicating, verbally #1

Equipment: Position cards

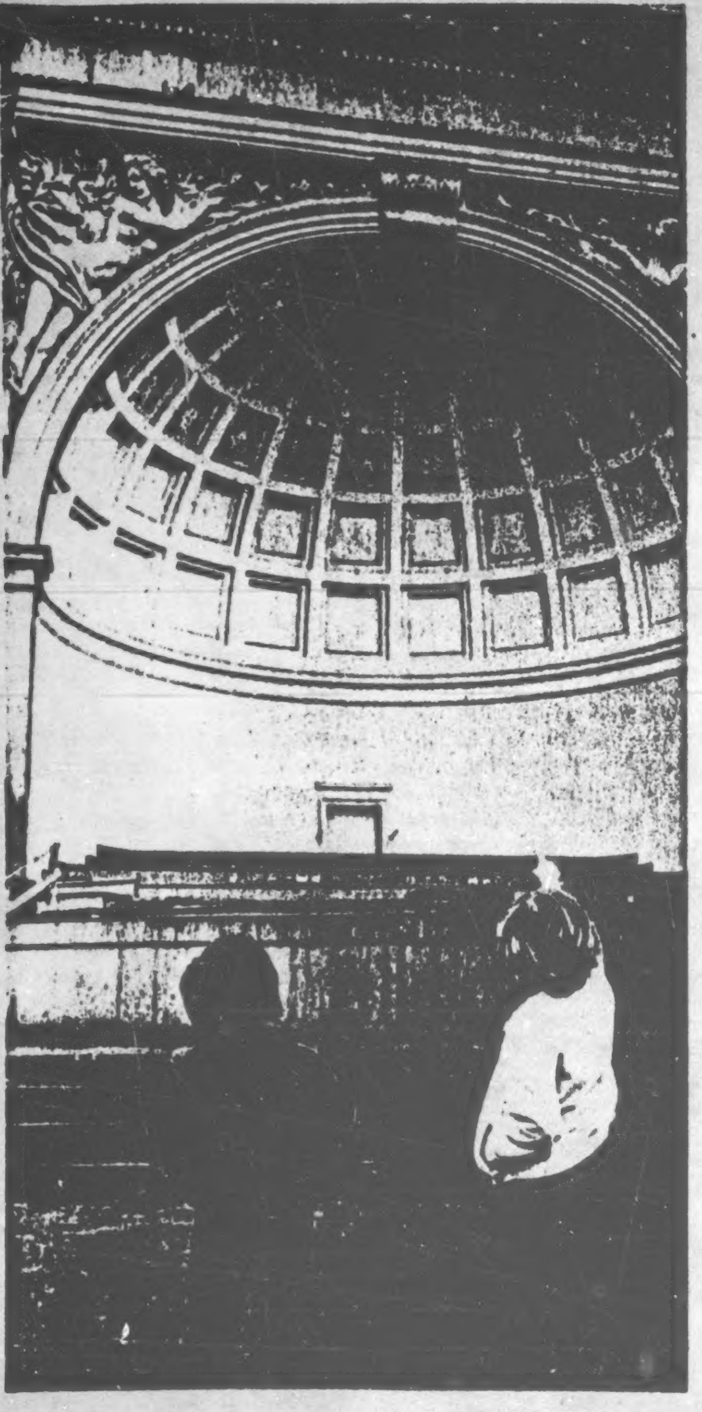
Procedure/Activities/Trips:

1. Children answer such questions: Where is the clock? The pencil sharpener? The fish? Use other objects in the classroom in describing the location of an object.

2. Play a position game. Have children place given objects; next to, beside, between, over on etc.

3. Use picture cards. Have children tell where given object is located.

4. Book - Over, Under, and Through, Tana Hoban



Part Eight
Position

OBJECTIVES

To describe the position of an object in relation to other objects.
To use position clues in order to decide where to place an object.

BACKGROUND INFORMATION

Describing where something is located in the classroom or on the school grounds is difficult for young children. The activities in this part help them learn the meanings of words and phrases such as *next to, above, below, to the right*. The children discover that the position of an object is given relative to other objects. By describing the movement of organisms, they are introduced to the idea of relative motion.

OVERVIEW

In the first four activities the children describe the positions of objects in relation to other objects, adding to their vocabulary of position words. The next two activities introduce the children to configuration through the use of totem pole pictures and parquetry-sticker mosaics. Finally, there is an evaluation activity on position.

44 Position of Classroom Objects

TEACHING MATERIALS

For a group of six to eight children:

several pictures illustrating positions of objects (provided by the teacher)

TEACHING SUGGESTIONS

Describing position. To begin this activity, ask questions such as, "Where is the clock?" "Where is the pencil sharpener?" "Where is the goldfish?" Children will probably respond with "on the wall," "over there," and "in the fish bowl." Ask them how they would describe the position of an object in the classroom to someone who has never seen the room. During the discussion, encourage children to use other objects in describing the location of an object. This activity provides many opportunities for developing oral language.

Position words. Many words that we use to describe position—*under, on, beside, next to*—are abstract for young children. You can help your pupils learn the meaning of these words by having them change their positions according to your directions. Ask the children to get under the table, sit on the chair, stand beside a friend, or stand between two chairs. To emphasize different positions using the same object, ask the children to get under a chair, stand behind a chair, or sit on a chair. Employ various classroom materials to illustrate the same ideas (balls roll "under" tables or are thrown "over" ropes).

Bring in a number of pictures, each of which clearly shows two or more objects in various positions relative to one another. Post the pictures and ask questions such as, "Which picture shows a dog in front of a girl?"

Emphasize by example that the position of an object (to the right, underneath, above, etc.) is dependent on its relationship to other objects. This activity is an early introduction to the idea of configuration.

Object-position game. Tell the children you will select an object in the room and describe where it is. The children are to guess the identity of the object from the location clues. Use clues that refer to other objects in the room; make your clues more and more specific until someone identifies the object. After a while, let children take turns acting as the leader. A child should first whisper to you the name of the object. If he gives an erroneous clue, speak privately with him before he continues. Play this game with small groups so all children can participate.

Objects outside the classroom. When outdoors, ask children to describe the locations of objects on the school grounds. Encourage them to use other objects in their descriptions. Choose an object on the school grounds that is not visible from where the children are standing but is well known to them. Ask them how they would direct a new student to go to that object from where they are now standing. See how many "correct," useful directions the children can devise for each object.

Movement of organisms. Describing the movement of a fish in a bowl or some organism in a cage provides an interesting challenge for children. Encourage them to relate an organism's movement to some other object [illegible] the bowl or cage rather than to say, "It swam away."

LESSON PLAN #2 POSITION

Title: Positioning Dots and Drawing Figures

Source: SCIS, Beginnings, p. 82 (next page)

Content Objective(s): Children will be able to use position words such as next to, above, below, to the side, etc., in describing the location of objects.

Process Objective(s):
Observing
Communicating

Equipment:
Drawing paper
Crayons
Colored dots

Procedure/Activities/Trips:

1. Draw a rectangle and place a colored dot off center in the rectangle. Ask children about the shape. Have children describe where dot is placed within it. Have children draw a rectangle and put a dot in the same position.
2. Draw two squares. Have children reproduce them. Have children explain the position of one shape in relation to the other.
3. Place various shapes in a container. Have children pick out one from your instructions and place a given place ex: take the blue triangle and place it under the table
4. Book - Over, Under, and Through, Tana Hoban

45 Positioning Dots and Drawing Figures

TEACHING MATERIALS

For each of six to eight children:

- drawing paper*
- crayons*

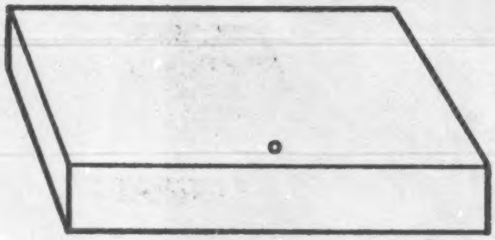
For the group:

- 2 sheets of self-adhesive dots (various colors) (Box C)

For the teacher:

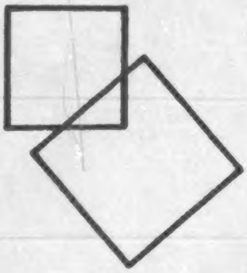
- paper*
- crayons*

* provided by the teacher



ADVANCE PREPARATION

Draw a rectangle on a piece of paper; on another piece, draw two overlapping squares, rotating one somewhat, as shown in the illustration.



TEACHING SUGGESTIONS

Dot in the rectangle. Show the group your drawing of a rectangle and place a colored dot off center in the rectangle. Ask the children about the shape on your paper (review the word *rectangle* if necessary) and then ask them to describe where the dot is placed within it. As they answer, introduce helpful descriptive words. After the discussion, ask each child to draw a rectangle on his paper; help children who have trouble. Then ask each child to put a dot in approximately the same position as you placed yours. Discuss with individuals how they decided where to place their dots. You might wish to challenge the children to place a dot of another color within the rectangle in response to your verbal directions.

Drawing squares. Show the children your picture of two squares and ask them to reproduce it. Check to see whether each child can draw the squares and orient them the right way. If children have trouble making the drawings, give them blocks to trace or two stickers to paste in the correct positions. Some children might produce additional masters that others try to copy. At the conclusion of the activity, encourage children to explain the position of one shape in relation to the other.

LESSON PLAN #3	POSITION
Title:	Comparisons on the Flannel Board
Source:	SCIS, Beginnings, p. 84, (next page)
Content Objective(s):	Children will be able to tell the location of different shapes.
Process Objective(s):	Communicating
Equipment:	Flannel board 12 felt pieces Filmstrip FS8(B-07) "Up, Down and All Around Projector
Procedure/Activities/Trips:	1. Place felt pieces on the flannel board and give children instructions as to where to position them. 2. Place pieces in different positions and have children tell where given shapes is in relation to another. Blue circle under red square. Large triangle over smallest rectangle. 3. Show filmstrip - "Up, Down and All Around" 4. Book - Over, Under, and Through, Tana Hoban

47 Comparisons on the Flannel Board

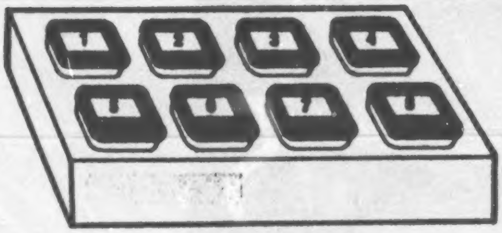
TEACHING MATERIALS

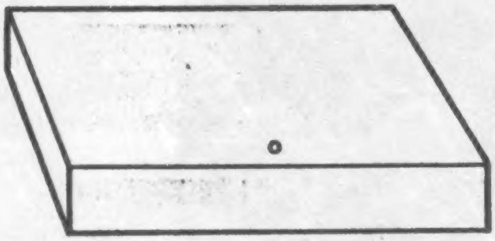
For each of six to eight children:

- 1 small flannel board (Box C)
- 1 cardboard tray (Box C)
- 12 felt pieces (Container 6)

For the group:

- large flannel board (Box C)
- assortment of felt pieces (Container 6)





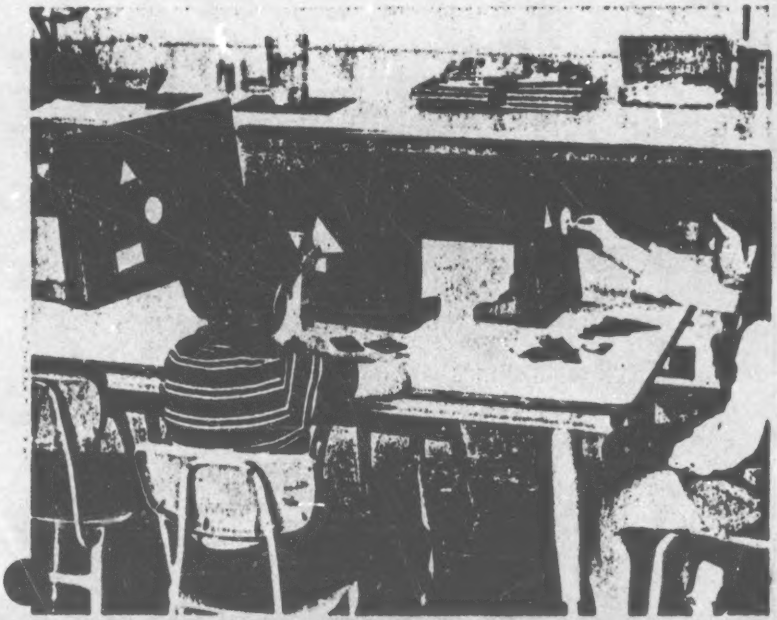
ADVANCE PREPARATION

Put felt pieces of various shapes and colors on a tray for each child.

TEACHING SUGGESTIONS

Using the large flannel board. Ask a child to place felt pieces on the flannel board as you give instructions such as: "Put a blue circle under a red square." "Place the largest triangle over the smallest rectangle." "Put a circle in the middle of the square." The words *over* and *on top of* can be interpreted in two ways; bring out both possibilities in your discussion with the children. Repeat the activity with other children. Let the children use the flannel board and felt pieces during their free time.

Individual flannel boards. Give each child a flannel board and a tray of felt pieces. Make a pattern of felt pieces on the large flannel board and ask the children to copy it. After you have repeated this activity several times, let children design their own patterns and show the boards to their neighbors. As the children compare the patterns, encourage them to describe similarities and differences. These discussions will enrich the children's understanding of words that describe color, shape, size, number, and object positions.



LESSON PLAN #4 POSITION

Title: Parquetry - Sticker Mosaics

Source: SCIS, Beginnings, p. 86 (next page)

Content Objective(s): The children will reproduce patterns.

Process Objective(s): Observing

Equipment:
25 to 30 parquetry stickers (containers 7-8)
Duplicated papers
Construction papers

Procedure/Activities/Trips:

1. Make 5 different mosaic patterns using 5 to 10 parquetry stickers for each.

   Prepare spirit masters showing outlines of the patterns.

   Children reproduce the patterns by gluing stickers to the pages.

2. Give children several copies of the same outer edge pattern and have them produce different pictures.

3. Children cut up stickers to include more than one color in one part of a pattern.

49 Parquetry-Sticker Mosaics

TEACHING MATERIALS

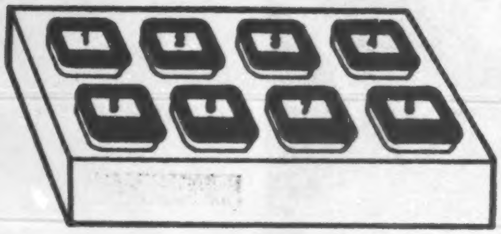
For each of six to eight children:

- 25–30 parquetry stickers (Containers 7 and 8)
  duplicated pages*

For the teacher:

- 25–50 parquetry stickers (Containers 7 and 8)
- 5 spirit masters*
- 5 sheets of construction paper*

* provided by the teacher



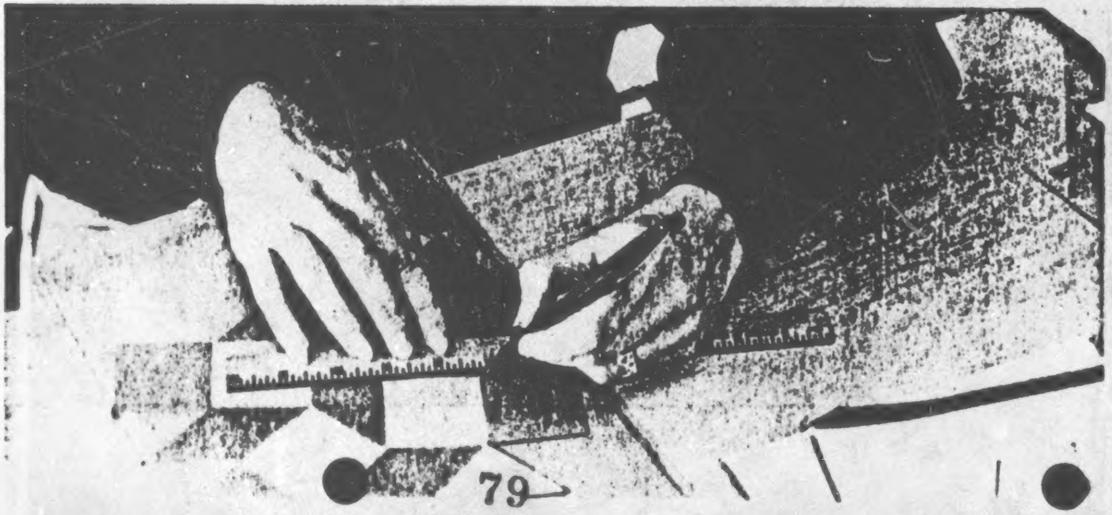
ADVANCE PREPARATION

On sheets of construction paper make five different mosaic patterns using five to ten parquetry stickers for each. Prepare spirit masters showing outlines of the patterns. For the first three patterns, draw the outline of each sticker. For the other two, draw only the outer edge of the pattern. To produce the spirit masters, place tracing paper over the mosaic pattern and outline the stickers. Then place the tracing paper on the spirit master and retrace the lines. (The piece of tissue between the master and the carbon can be used as tracing paper.)

TEACHING SUGGESTIONS

Give each child a duplicated page showing the outline of each sticker in the pattern. Display the mosaic corresponding to the outline. Invite children to reproduce the pattern by gluing stickers to the page. As children complete the page, distribute the other two complete-outline pages, one at a time, and display the corresponding mosaic. If some children want to continue this activity, distribute the pages showing only outlines of the outer edges of the pattern to them and have them follow your pattern to complete their own mosaic.

As an interesting extension of this activity, give the children several copies of the same outer-edge pattern and without displaying the mosaic pattern, ask how many different pictures they can produce. Particularly creative children may cut up stickers to include more than one color in one part of a pattern. Encourage such creativity.



LESSON PLAN #5 POSITION

Title: Positioning Puzzles

Source: SCIS, Beginnings

Content Objective(s): Children will be able to position objects to form a picture.

Process Objective(s): Observing

Equipment:
Puzzles
Butterfly
Pictures
Parquetry blocks
Glue
Heavy paper

Procedure/Activities/Trips:

1. Picture Puzzles. Children make their own puzzles by gluing pictures on heavy paper. Cut out in large pieces. Put back together.
2. Parquetry Blocks. Make patterns, children position blocks on square that match the form pattern.

LESSON PLAN #6 POSITION

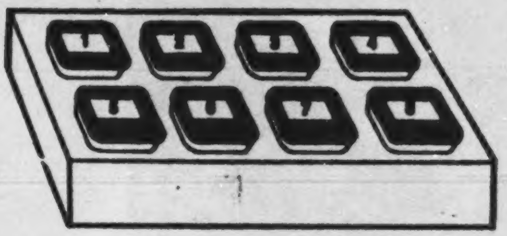
Title:	Evaluation: Position
Source:	SCIS, Beginnings, p. 87
Content Objective(s):	The children will review position.
Process Objective(s):	Classifying
Equipment:	10 to 20 parquetry stickers (containers 7-8) 1 sheet of paper
Procedure/Activities/Trips:	1. Have children glue stickers on a sheet of paper in response to directions, blue sticker next to red; triangle in lower left corner; etc. 2. Using a container of shapes, give instructions to place in given locations. 3. Using position cards, have children tell position of various objects.

50 Evaluation—Position

TEACHING MATERIALS

For each of four to six children:

- 10–12 parquetry stickers (Containers 7 and 8)
- 1 sheet of paper (provided by the teacher)



TEACHING SUGGESTIONS

To evaluate the children's understanding of position, give them each a sheet of paper and ask them to glue stickers on it in response to your directions. You might say, "Put a blue sticker next to a red one," "Put a triangle in the lower left corner," "Put a square over a diamond," or "Draw a circle and put a triangle on top of it." These last two directions (*over* and *on top of*) can be interpreted in two ways; bring out both possibilities in your discussion with the children.

DIAMOND HEAD

FOREWORD

Most of these science lessons are intended to be used with a small group of children (not more than eight) using a maximum of thirty minutes per lesson. If your teaching style includes the use of centers, the science lesson could be used in a center with the teacher or other responsible person as the resource person. If your teaching style is more traditional, you could set aside 30 minutes on successive days to work with each group while the other children have free time. You would need to have a parent helper, aide, or older student in the classroom to assist those children not involved in the science lesson. Children should be aware that each will have a turn with the lesson activities.

QUANTITY

LESSON PLAN #1 QUANTITY

Title: Counting Beads

urce: SCIS, Beginnings, p. 73-74 (next page)

Content Objective(s): Children will be able to compare various groups of objects and describe the various groups of objects.

Process Objective(s): Observing

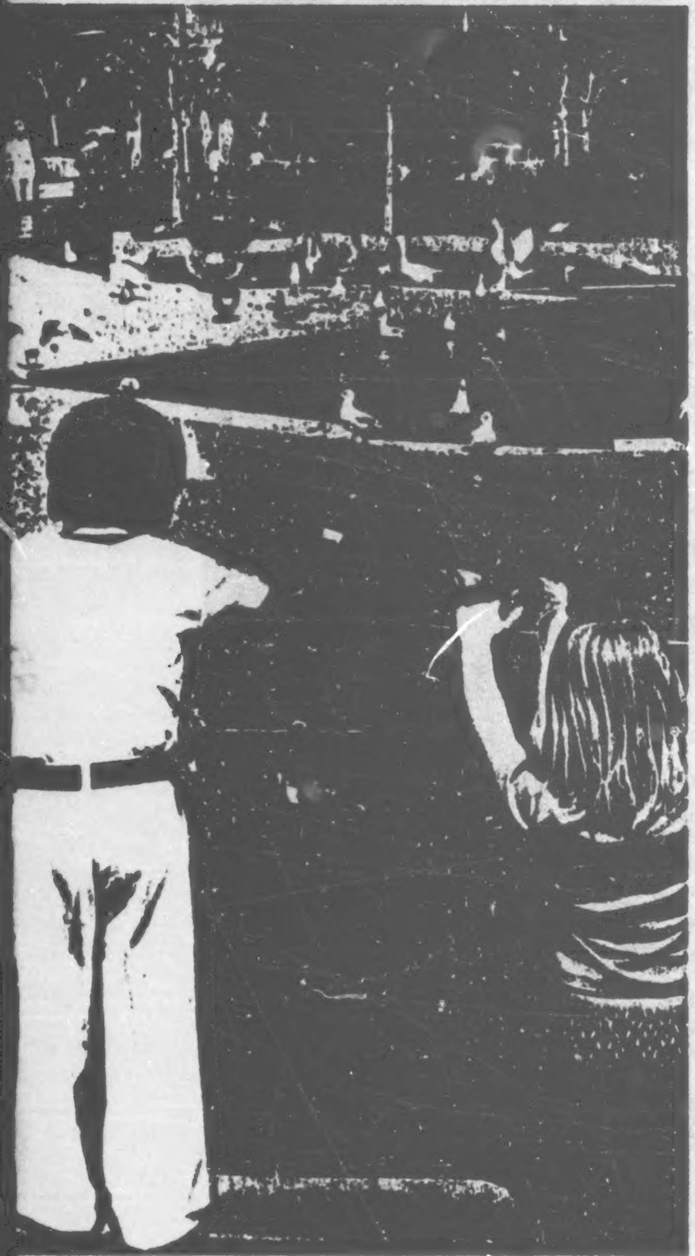
Equipment:
Cardboard tray
15 to 20 beads
1 or 2 shoelaces

Procedure/Activities/Trips:

1. Children compare two strings of beads. Place an assortment of beads of different colors and shapes on table. Have children make an assortment just like it. Count beads, then number of red and blue, etc. Have children compare and describe the various groups of objects.

2. Put together a string of beads containing a few colors and shapes. Have children produce strings containing the same number of beads or more or fewer beads.

3. Produce two strings of beads having the same number, but one string with beads closer together. Children discuss which is longer, which has more.



Part Seven
Quantity

OBJECTIVES

To count and compare quantities of objects.
To make simple measurements.

BACKGROUND INFORMATION

Quantitative comparisons are important in scientific investigations. The SCIS program has as a major goal the development of skills in quantitative thinking. In kindergarten, there are many opportunities for the child to make quantitative comparisons in everyday activities. Take advantage of these opportunities in addition to carrying out the activities in Part Seven. In both the everyday experiences in your classroom and the following activities, encourage children to compare collections of objects to determine equivalence or difference in number. Your pupils will eventually recognize that the number of objects does not change when one rearranges them. Much of the work on quantity is derived from studies by Piaget and others on the intellectual development of young children. For further information on intellectual development, see the *SCIS Teacher's Handbook*, Chapter 3.

OVERVIEW

In the first activity children's comparisons of two strings of beads lead to ideas of equivalence. The second activity, using the "Color" filmstrip, emphasizes equivalence and the one-to-one correspondence of objects by number. The idea of a counting unit is introduced when the children work with marbles and vials filled with water in the third and fourth activities. Many children will have trouble understanding and using a unit of measure. An optional activity on comparison of weights is included for classes that have an equal-arm balance. The final activity [illegible]n evaluation of the children's understanding of the conce[illegible] [illegible]quantity.

39 Counting Beads

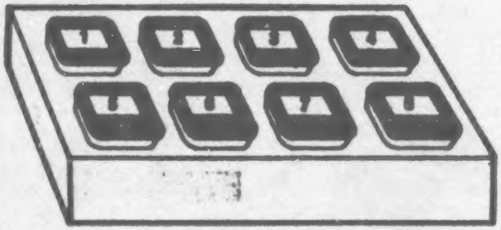
TEACHING MATERIALS

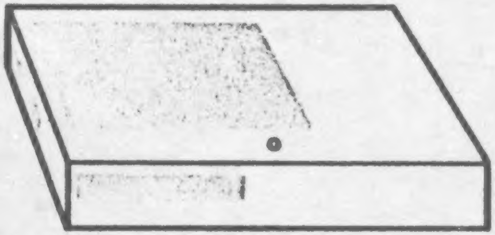
For each of six to eight children:

1 cardboard tray (Box C)
15–20 beads (Containers 4 and 5)
1 or 2 shoelaces (Container 5)

For the teacher:

1 tray (Box C)
15–20 beads (Containers 4 and 5)
2 shoelaces (Container 5)





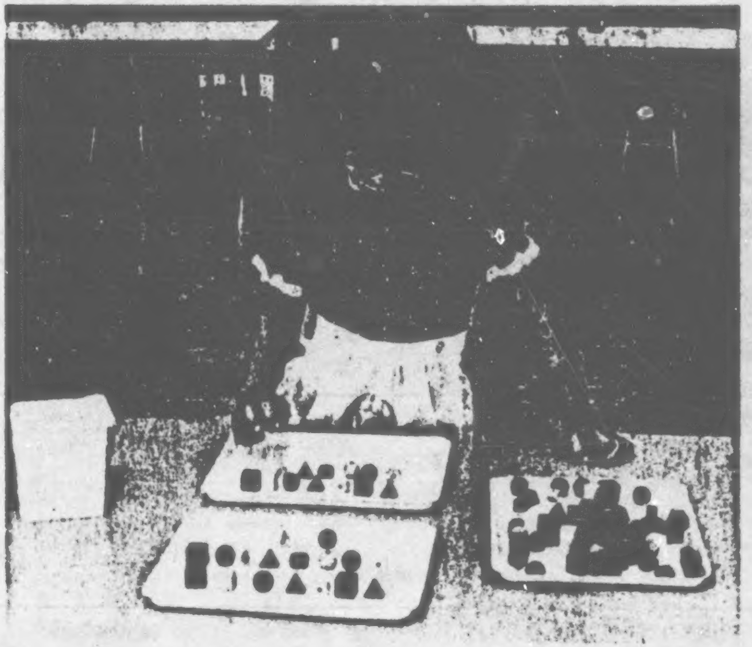
ADVANCE PREPARATION

Put beads of various colors and shapes onto a tray for each child and yourself. Knot one end of each shoelace.

TEACHING SUGGESTIONS

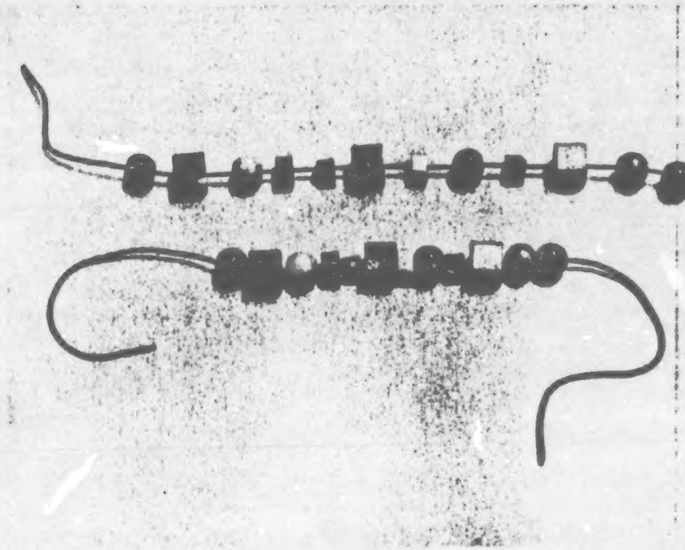
Sorting beads. Distribute a tray with beads to each child. Place your simple assortment of beads of different colors and shapes on the table (for example, four red and three blue beads of the same or two different shapes). Ask the children to make an assortment just like this one. Count with them after they finish. Count total beads, then numbers of red and blue, then numbers of cubes, spheres, etc. Encourage the children to compare and describe the various groups of objects.

Next, ask the children to produce on their trays an assortment containing a smaller number of beads, more red beads, or fewer round beads than the demonstration assortment contains. To do this, children will have to think about parts rather than the whole assortment. Give them many opportunities to carry out this activity, increasing the variety of beads in the assortment as the children become more capable.



Strings of beads. Put together a string of beads containing a few colors and shapes. Show the children the string you prepared and ask them to produce strings containing the same number of beads or more or fewer beads. After the children have completed this activity, ask them to produce strings with the same number of beads but fewer cubes (or round beads) or more red (or blue) beads.

Puzzle strings. Produce two strings of exactly the same number and kind of beads. On one shoelace put the beads close together, on the other spread them apart. Ask questions such as, "Which string of beads is longer?" "Which string has more beads?" Encourage disagreement and discussion. As the children gain experience, make the problem more complex by removing some of the beads from one string and spreading them out to make the string look longer or by varying the numbers and kinds of beads on each string. Ask questions to emphasize the differences between the strings. During the discussions, encourage controversy among the children, but point out the correct answer in each case. Do this by going back to the materials and physically demonstrating the equivalence or difference in number of beads. The same kinds of experiences can be provided by using other collections of objects, such as red and black checkers, arranged in two lines.



LESSON PLAN #2 QUANTITY

Title: Comparing Flower Pictures

Source: SCIS, p. 75 (next page)

Content Objective(s): Children will be able to compare quantities of flowers.

Process Objective(s):
Observing
Communicating

Equipment:
Filmstrip
Color Box C
Projector
Flower pictures from magazines

Procedure/Activities/Trips:

1. Show the filmstrip of flow pictures. Ask questions about numbers of flowers-more red than purple?
2. How many on plants? .etc. Discuss properties of the flowers.
3. Have children bring pictures of flowers from home. Child shows his picture. Child ask group questions about his picture.

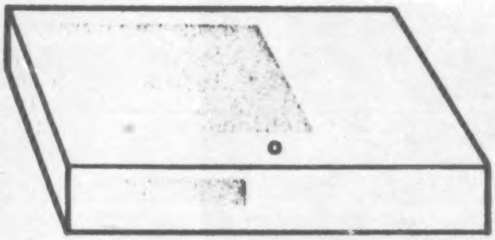
40 Comparing Flower Pictures

EACHING MATERIALS

or a group of six to eight children:

- filmstrip, "Color" (Box C)
- filmstrip projector*
- flower pictures from magazines*

* provided by the teacher



ADVANCE PREPARATION

Obtain a filmstrip projector and set it up. You may wish to carry out this activity with the whole class.

TEACHING SUGGESTIONS

Show the filmstrip of flower pictures to the group. Ask questions that help children compare different flowers in a single picture or flowers in different pictures: "Are there more red flowers than purple flowers?" "How many flowers are on that plant?" Ask them to count the number of flowers of one kind or one color to emphasize the concept of quantity. Also ask questions that help children focus on comparing and discussing properties of the flowers. Ask these same kinds of questions about flower pictures in magazines and about flowers the children see on field trips.

Flower picture puzzles. Encourage children to bring in flower pictures from home. Explain that each child should show you his picture and tell you a question he would like to ask of the group. You can write out all questions and post them with the pictures. Read the questions to the children. From the kinds of questions they ask and the pictures they bring in, you obtain useful feedback regarding the children's developing abilities to compare quantities of objects.

LESSON PLAN #3 QUANTITY

Title: Comparing Quantities of Objects

Source: SCIS, Beginnings, p.76-77 (next page)

Content Objective(s): To compare marbles in tubes. Children will be able to tell how many counting units are used in measuring activity.

Process Objective(s):
Observing
Inferring
Communicating

Equipment:
2 plastic tubes
1 plastic bag
Box C
20 small marbles
1 small plastic vial
water
pitcher
pan to catch spills
sponges for clean-up

Procedure/Activities/Trips:

1. Give each child two tubes and a bag of marbles. Child places marbles in both tubes.

   Child counts the number in each tube. Child observes the heights of the marble stacks.

   Discuss relationship between the number of marbles in the tube and the height of the stacks.

2. Demonstrate how to fill a vial with water and pour into a tube. Children pour same and different numbers of full vials into each tube.

3. Pour a given amount of water in a tube. Children guess how many vials full was poured.

   Compare water levels.

41 Comparing Quantities of Objects

TEACHING MATERIALS

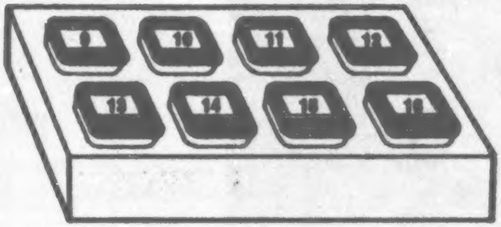
For each of four to six children:

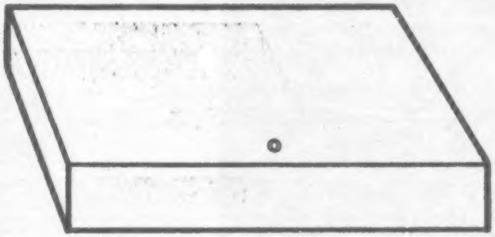
- 2 plastic tubes and bases (Box C)
- 1 plastic bag (Box C)
- 20 small marbles (Container 13)
- 1 small plastic vial (Container 15)

For the group:

- 10 large marbles (Container 13)
- 4 large plastic vials (Container 15)
- containers for water*
- water*
- sponges for cleanup*

* provided by the teacher





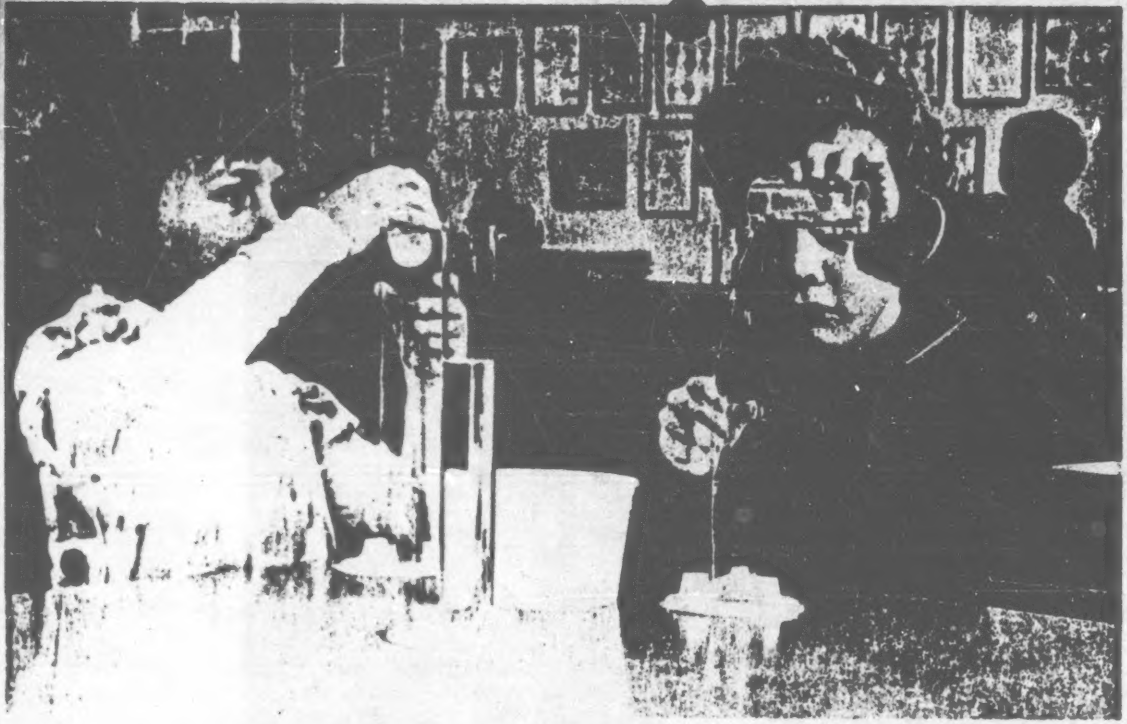
ADVANCE PREPARATION

Put twenty small marbles into a plastic bag for each child. Designate a water-play area in the room for the second activity. You might use rice, sand, or cornmeal instead of water.

TEACHING SUGGESTIONS

Marbles in tubes. Give each child two tubes and a bag of marbles. Ask each child to place marbles in both tubes, count the number in each tube, and observe the heights of the "marble stacks."

Discuss with the group the relationship between the number of marbles in a tube and the height of the stack. Give the children a number of opportunities to compare marbles in tubes. After the children have had extensive experience using marbles of the same size, introduce the large marbles to one or two children. Discuss the effect of using large marbles in one tube and small marbles in the other. Do not expect all children to understand the size/number/height relationship. It is an interesting challenge for more mature pupils.



Water play. Young children like to pour water and this kind of "play" is very valuable in helping them understand simple quantitative relationships. Let the children have several experiences pouring liquids before giving them the tubes and vials. Then demonstrate how to fill a vial with water and pour the contents into a tube. Have the children pour the same and different numbers of full vials of water into each tube to compare the water levels. From these experiences, children learn that the height of water in the tube indicates how many vialsful were poured in.

Quantitative experiences. Show the children one tube with a given amount of water (three, four, or five vialsful) and ask them to determine how many vialsful were poured in. Use only full vials of water at first, later adding half-vialsful if you wish.

Children can make many comparisons of quantity in this way, using variously sized objects to pour from. For example, disagreements regarding which of two punch cups holds more can be settled by using the tubes. Simply fill each cup, pour the liquid into a tube, and see which tube has the higher level of liquid.

Introduce the large vials and pour several vialsful of water into a tube. Some children may realize that one large vial of water equals two small ones. Give interested children a chance to use the large vials. All these activities introduce children to the use of a standard unit of measure when comparing quantities.

LESSON PLAN #4 QUANTITY

Title:	Comparing Objects by Weights
Source:	SCIS, Beginnings, p. 78 (next page)
Content Objective(s):	Children will be able to compare objects by weight.
Process Objective(s):	Observing Inferring Communicating
Equipment:	Equal arm balance 15 to 20 similar objects 2 sets of small objects
Procedure/Activities/Trips:	1. Lifting Objects. Children will lift and compare objects that are very different in weight before using a balance. (Use terms heavier than or lighter than.) 2. Using a Balance. Children decide whether object A is heavier than object B. Have some children put 3 or more objects in order by weight. Children will balance the scale by putting the same number of life objects on each side. 3. Balance Game. Select 2 children to play a game with the balance. Give each child a set of small objects.

42 Comparing Objects by Weight (Optional)

TEACHING MATERIALS

For a group of six to eight children:

equal-arm balance*
15–20 similar objects*
2 sets of small objects*
* provided by the teacher

ADVANCE PREPARATION

If possible, obtain a balance so the children can have experience weighing objects. Assemble a collection of objects, such as washers, to use with the balance. Prepare two sets of similar small objects (toy cars, crayons, checkers, blocks) for the balance game.

TEACHING SUGGESTIONS

Lifting objects. Children should have many experiences lifting and comparing objects that are very different in weight before using a balance. Encourage children to use terms like *heavier than* or *lighter than* to describe differences in weight.

Using a balance. A balance can be used to compare the weights of various objects in the classroom. Some children will be limited to deciding whether object A is heavier than object B. Other children will be able to put three or more objects in order by weight. This skill indicates a great deal of sophistication.

Introduce the collection of objects and let your pupils work with them. Children will discover that they can balance the scale by putting the same number of like objects on each side. During all work with the balance, encourage discussion about objects and their weights. Make the balance available for use at various times during the day.

Balance game. Invite two children to play a game with the balance. Give each child a set of small objects. Tell one child to place one or more objects on one side of the balance and invite the second child to add some of his objects to the other side to balance the scale. Balancing the scale earns the child a point. Let the children take turns being "first."

LESSON PLAN #5 QUANTITY

Title: Evaluation: Quantity

Source: SCIS, Beginnings, p. 79 (next page)

Content Objective(s): To review quantity, preferably with fewer than 6 to 8 children at a time.

Process Objective(s):
Inferring
Observing
Communicating

Equipment:
2 cardboard trays (Box C)
10 to 15 similiar objects of 2 different colors (beads)
Sheet of paper or pieces of cloth

Procedure/Activities/Trips:

1. Separate objects by color on the trays, cover with cloth or paper. Child removes the cloth or paper and have the child tell which tray has more objects on it. Have him give reasons for his answer.

2. Place the same number of objects on each tray but have them very close together on one tray. Child tells which has more giving reasons for his answer.

3. Place a different number of objects on each tray and spread out the smaller number.
   Child tells which has more, giving reasons.

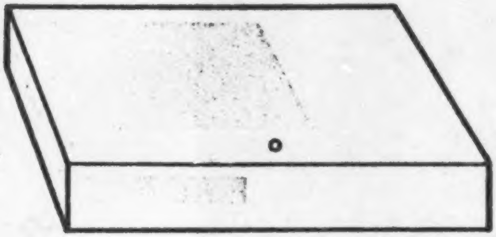
43 Evaluation—Quantity

TEACHING MATERIALS

For the teacher:

- 2 cardboard trays (Box C)
- 10–15 similar objects of two different colors*
- sheets of paper or pieces of cloth*

* provided by the teacher



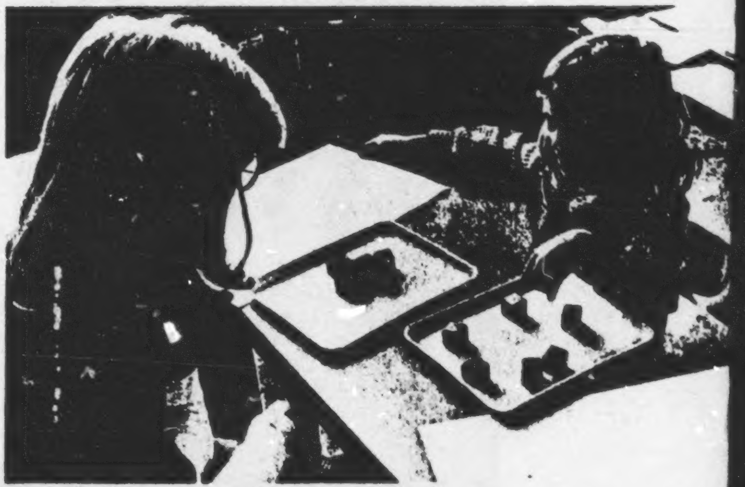
ADVANCE PREPARATION

This activity works best when carried out with individual children. Obtain a set of similar objects (checkers, beads, poker chips) and separate them by color on the trays. Cover the trays with cloth or paper. At times, have the same number of objects on each tray but have them very close together on one tray and spread out on the other; at other times, place a different number of objects on each tray and spread out the smaller number. Change the contents of the trays for each child.

TEACHING SUGGESTIONS

Invite a child to your desk, remove the covers from the trays, and ask him which tray has more objects on it. Listen carefully to his answer and encourage him to give reasons for it. Observe what he does to the objects to help him answer the question. From these observations, you will gain an idea of the child's understanding of quantity. Some children will be confused and guess, others will compare the objects on each tray one by one, while a few may be able to count accurately the objects on each tray.

If you want to explore further the child's understanding of quantity, ask the child to look at both trays. One tray might contain red checkers and the other, black. Now ask the child whether there are more red ones or more checkers in the entire collection. To successfully answer this question, he must think of the red checkers as a subgroup of the whole class of objects. This kind of thinking is very difficult for children of this age. A child's answer provides clues regarding his intellectua development.



FOREWORD

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LESSON PLAN #1 TEXTURE

Title: Describing Objects According to Texture

Source: SCIS, Beginnings p. 48 (next page)

Content Objective(s): Children will be able to:
1. Describe objects according to texture.
2. Answer questions about the sense of touch.

Process Objective(s): Communicating, verbally #1

Equipment:
Cardboard tray
Sandpaper
Plastic foam
Fur
Soap
Clay

Procedure/Activities/Trips: Children feel objects from a prepared tray of objects.

Children describe objects texture.

Children answer following questions:

1. What can you tell about this object?
2. What does your sense of touch tell about it?
3. What does the object remind you of?
4. What does it feel like?

19

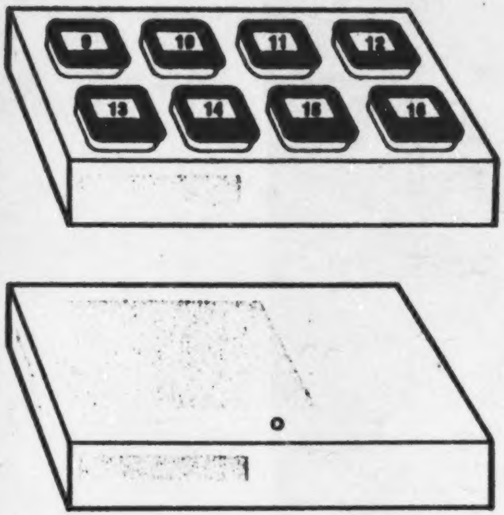
Texture of Classroom Objects

TEACHING MATERIALS

For a group of four to six children:

- 1 cardboard tray (Box C)
- 1 or 2 pieces each of
  - sandpaper (Container 9)
  - plastic foam (Container 9)
  - fur (Container 9)
  - soap*
  - clay*

* provided by the teacher



ADVANCE PREPARATION

Prepare a tray with the objects listed or suitable substitutes selected for their distinctive textures.

TEACHING SUGGESTIONS

Touch tray. Show the children the tray and invite them to feel the objects on it. Let each child describe an object's texture. Encourage the use of complete sentences and help the children's verbal expression by providing the words needed. Ask questions such as, "What can you tell us about this object?" "What does your sense of touch tell you about the object's appearance?" "What does the object remind you of?" "What does it feel like?" The children will probably begin by merely naming the object. In that case, use some of the questions above to help them think in terms of texture.

Touch hunt. Have the children go on a touch hunt around the room to find objects that are smooth, rough, hard, soft, prickly, or furry, for example. You might divide the group in half and see who is first to find an object that has the texture you describe. The hunt can also be carried out outdoors where the variety of textures is much greater.

Touch discussion. Hold a discussion in which children relate experiences where the sense of touch warned them of danger, such as "too hot bath water," "slippery pavement," or "a sharp knife." If the children have little to offer, mention a few examples and tell them you will discuss touch experiences again in a few days. It is best to hold short discussions over several days rather than have many children describe experiences on one day.

LESSON PLAN #2 TEXTURES

Title: A Touch Hunt

Source: SCIS, Beginnings, p. 48 (see previous page)

Content Objective(s): Children will be able to describe objects and tell if they are:

Smooth
Rough
Soft
Hard

Process Objective(s): Communicating, verbally #1

Equipment: Classroom objects:
- clay
- rock (on science table)
- soap
- fur

Procedure/Activities/Trips:

1. Go on a touch hunt in the classroom.
2. Find objects of different textures:
   - objects that are smooth
   - objects that are rough
   - objects that are soft
   - objects that are hard
3. Do rhythm records - Feeling
4. Story - How Does It Feel?
   My Five Senses by Aliki

LESSON PLAN #3 TEXTURE

Title: Sharing Experience

Source: SCIS, Beginnings, p. 48 (see Lesson Plan #1)

Content Objective(s): Children will become more aware of the sense of touch.

Process Objective(s): Communicating

Equipment: Film - F-1354, 8 minutes, "You and Your Sense of Touch"

Procedure/Activities/Trips:

1. Children discuss experiences they have had where the sense of touch warned of danger.
   slippery
   too hot bath
   sharp knife
2. Show Filmstrip - Your Sense of Touch
3. Children will describe objects they touch in class.

LESSON PLAN #4 TEXTURE

Title: Touch Screen Game

Source: SCIS, Beginnings, p. 50 (see next page)

Content Objective(s): Children will be able to:
  1. Discuss texture of objects.
  2. Compare the texture of objects.

Process Objective(s): Communicating

Equipment: Collection of objects
Screen

Procedure/Activities/Trips: Children play touch screen games.

1. Place object behind screen.

2. Feel objects (objects are visible to rest of group).

3. Child describes the object.

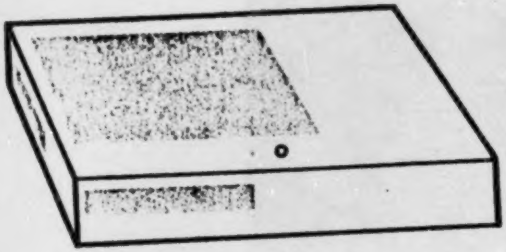
4. Child compares two objects.

21 Touch Screen Games

TEACHING MATERIALS

For a group of six to eight children:

touch screen (Box C)
collection of objects (from kit and classroom)



ADVANCE PREPARATION

Assemble the touch screen, using the printed instructions. Collect a variety of objects that vary in texture. To add excitement, include an ice cube. Gather pairs of objects that are similar in size and shape but vary in texture for the comparing textures game. Some possibilities are a Ping-Pong ball and a golf ball, a sugar cube and a wood block, an apple and an orange, a marshmallow and a piece of hard candy.

TEACHING SUGGESTIONS

Introducing the touch screen. Ask a child to sit behind the screen and put his hands through the openings. Then give him an object to feel and describe. (The object should be visible to the rest of the group.) The child's description should begin with the properties of the object. Ask him questions such as, "What is it shaped like?" or "What does it feel like?" to encourage greater description. You might include more difficult questions such as, "What is it made of?" or "What is it used for?" Tell the child to describe the object thoroughly before he names it. Repeat the activity, letting different children sit behind the screen. Children will learn a great deal about the use of senses other than sight. Imaginative ones may, for example, drop the object to obtain more information about it.

Comparing textures game. Invite a child to sit behind the screen and to put his hands through the openings. Place a pair of objects in his hands. Ask him to compare the objects, looking for similarities and differences, and to try to identify them. He can touch the objects, drop them, and scratch them. As the other children listen to him, they will learn many ways to gather information. If a child is unable to identify the objects, encourage the group to give him clues that do not require sight. For example, someone could suggest squeezing. The discus of the objects is far more important than accurate identifications.

LESSON PLAN #5 TEXTURE

Title: Touch Bags

Source: SCIS, Beginnings, p. 51 (next page)

Content Objective(s): Children will be able to distinguish among various textures of objects.

Process Objective(s):
Inferring #1
Communicating #1

Equipment:
Touch bags for each child
4 or 5 objects for each child

Procedure/Activities/Trips:

1. Children play mystery bag game.

   Each child has an object in a bag. Feel it, describe it without removing it. The group guesses what is in the bag.

   Children play touch bag game.

2. Select an object inside your bag, tell children how it feels.

3. Children will reach in their bag, feel objects and find one that teacher described.

22 Touch Bags

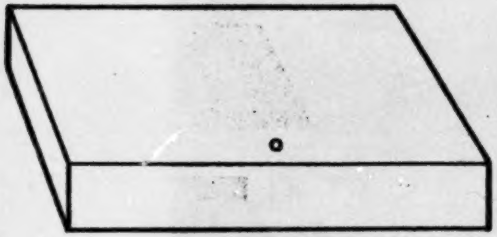
TEACHING MATERIALS

For each of six to eight children:

1 touch bag (Box C)
4 or 5 objects (from kit and classroom)

For the teacher:

1 touch bag (Box C)
4 or 5 objects (from kit and classroom)



ADVANCE PREPARATION

Gather similar sets of four or five objects for each child and yourself, including, for example, a marble, a crayon, a piece of chalk, a cotton ball, a pipe cleaner, a piece of sandpaper, and a piece of velvet. For the first experience, put only one object in each bag. Have the others ready for the touch bag game.

TEACHING SUGGESTIONS

Mystery bag game. Give each child a bag and invite one child to feel and describe the object without removing it. As he describes the object, ask the others in the group to guess what is in the bag. Alternatively, several children can feel the objects in their bags and guess what they are. Discuss any differences in their guesses. This discussion is valuable as an early language experience as well as for judging texture.

Keep one mystery bag available over a long period of time. Change the object in it every day.

Touch bag game. Give each child a bag filled with objects and tell him not to look inside. Select an object inside your bag and say, "I touch, I touch, oh, what do I touch? It is (rough, slippery, etc.)." Tell the children to reach into their bags, feel the objects, and find the one you described. When all seem to have found it, ask each child to remove his object. Discuss the choices and help any child who had difficulty making a suitable selection. Repeat the game with the other objects in the touch bag as long as interest is high. After the children become familiar with the game, allow them to take turns being "leader."

Touch bag detective. Put an object that the children have not seen in a touch bag. Tap the hidden object with a pencil, making sure all can hear the sound. Ask if anyone can tell by the sound alone what the object is. Then let them smell but not see the object. Ask, "Now does anyone know what the object is?" If some children think they know the answer, tell them to keep it a secret. Next, let them feel but not see the object. Have each child report what he thinks the object is before you remove it. Then show them the object. Ask, "What clues did you use to find out what the object is?" You might wish to play this game with the children frequently.

Comparing textures. Provide two touch bags for a child. Place a different object in each bag—perhaps a piece of sandpaper in one and a piece of velvet in the other. Ask the child to place one hand in each bag and to describe what is in each hand. Encourage the use of comparison words such as, "The one in my left hand is rough, and the one in my right is smooth." Try this activity several times, using pairs of objects that differ significantly in texture. Young children find it difficult to distinguish between smooth and soft; by using appropriate objects you can help the children learn how to make this distinction.

LESSON PLAN #6 TEXTURE

Title: Making A Texture Collage

Source: SCIS, Beginnings, p. 49

Content Objective(s): Children will be able to: Group objects according to texture.

Process Objective(s): Classifying #2

Equipment:
Box
Objects of various texture
Construction paper
Glue

Procedure/Activities/Trips:

1. Make collage (children)
   Children glue objects on construction paper.

2. Children discuss what they did.

3. Children label collage in appropriate parts:
   a. Soft
   b. Hard
   c. Rough
   d. Smooth

20 Texture Collages

TEACHING MATERIALS

For a group of six to eight children:

- 1 box*
- objects of various textures*
- construction paper or cardboard*
- glue*

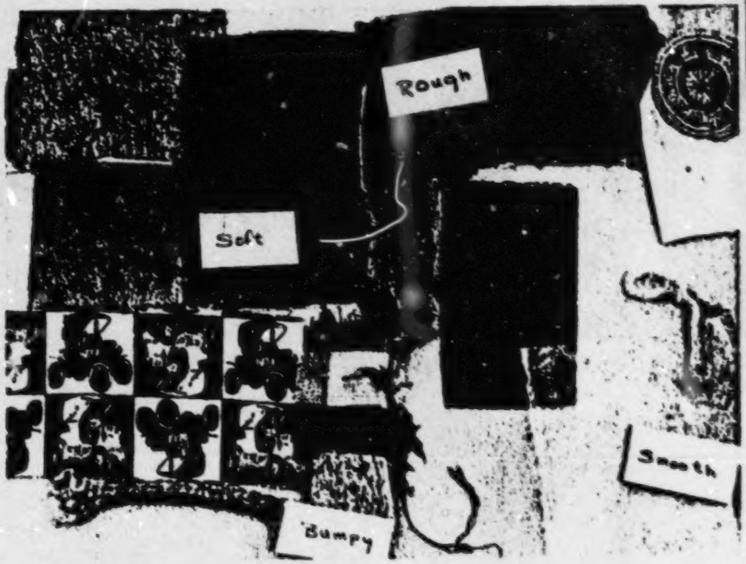
* provided by the teacher

ADVANCE PREPARATION

Assemble a collection of variously textured objects such as sandpaper, wax paper, tissue paper, and cloth. Place several samples of each item in a box.

TEACHING SUGGESTIONS

Show the children the box of materials and invite them to make collages with the objects by gluing them to cardboard or construction paper. Encourage the children to discuss what they create. Help them decide on words for labels describing the textures in the collages. Write out the labels and attach them to the appropriate parts of the collages.



Touch display. Set up some of the collages and other classroom objects in a display. Let the children touch the objects whenever they wish. Change the display frequently and encourage the children to bring objects from home to place in it. Suggest that some children bring soft objects, others hard objects, and so on.

Invite children to see how many different designs they can make with the objects in the display. This activity introduces the idea that judgment of an object's texture may be affected by its relative position. For example, an object placed next to very rough sandpaper might be described as smooth, but when placed near velvet, it might be described as rough. If necessary, guide the discussion toward texture.

LESSON PLAN #7	TEXTURE
Title:	Texture In Nature Walk in School Yard
Content Objective(s):	The children will be able to compare and group various objects according to texture.
Process Objective(s):	Observing #1 Classifying #1 Communicating, verbally #1
Equipment:	Cardboard Paper Bags Glue Construction paper Scissors
Procedure/Activities/Trips:	1. Texture Hunt: In groups have children search for various objects in the school yard. 2. Children will sort objects according to textur and define. 3. Children will make a texture board using object found on walk. Teacher will label.

LESSON PLAN #8 TEXTURE

Title: Snow

Source: Teacher Made

Content Objective(s): The children will be able to describe properties of snow.

Process Objective(s):
Observing #1, 2, 3
Inferring #1, 2, 4
Communicating, verbally #1, 2

Equipment:
Containers (to gather snow)
Snow
Thermometers
Film "Snow" F 3090 (7 min.)
Film projector
Plastic cups

Procedure/Activities/Trips:

1. Get snow
2. Have children think of words to describe snow, e.g. cold, wet, soft, etc.
3. Put snow in plastic glasses.
4. Check temperature with thermometer and record on blackboard.
5. Hold cup in hands. What happens to snow? Check temperature again and record.
6. Show film
7. When snow has melted, check temperature again and record. Have children describe properties of snow now.

Perhaps you could plan to make snow ice cream after the next good snowfall.

LESSON PLAN #9 TEXTURE

Title: Evaluation: Texture

Source: SCIS, Beginnings, p. 53 (see next page)

Content Objective(s): Children will be better able to describe an object texture.

Children will be better able to compare two objects.

Process Objective(s): Observing #1
Communicating #1

Equipment: Various objects

Procedure/Activities/Trips: Select children who have been having difficulty describing and comparing textures.

1. Have children sit at a table facing away from it with their hands behind their back.
2. Place an object in each child's hand and have them describe its texture.
3. Give two objects at the same time and ask appropriate questions.

Have children sort into 4 different box texture that are really smooth, rough, soft and hard.

Group discussion on textures and what is my favorite thing to feel.

24 Evaluation—Texture

TEACHING MATERIALS

For a group of four to six children:

- various objects (from kit and classroom)

ADVANCE PREPARATION

From prior activities, you will know who is having difficulty describing and comparing textures. Select these children to participate in this activity.

TEACHING SUGGESTIONS

Invite the children to sit at a table, facing away from it with their hands behind their backs. Place an object in each child's hand and have him describe its texture to you. In this way you can quickly gather feedback regarding an individual's ability to describe textures. To evaluate a child's ability to compare and describe textures, give him two objects at the same time and ask appropriate questions.

FOREWORD

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LESSON PLAN #1 ODOR

Title: Odor: Changes in Perception of Odor

Source: SCIS, Beginnings, p. 56 (next page)

Content Objective(s): The children will be able to compare odor's as to sameness and difference.

Process Objective(s):
Observation #1, 2
Inferring #1, 2, 4
Classifying #1, 2
Communicating, verbally #1

Equipment:
Pill bottle
Various odorous objects
Cotton balls
Room freshner

Procedure/Activities/Trips: Talk about odor and the sense of smell.

1. Film F 1355 - "You and Your Sense of Taste and Smell".
2. Discuss.
3. Odor Table - have bottles filled with various odors. Allow children to smell. Discuss.
4. Supplemental activity might include playdough with various odiferous materials (i.e., peppermint, wintergreen, orange, extract, etc.

ODOR

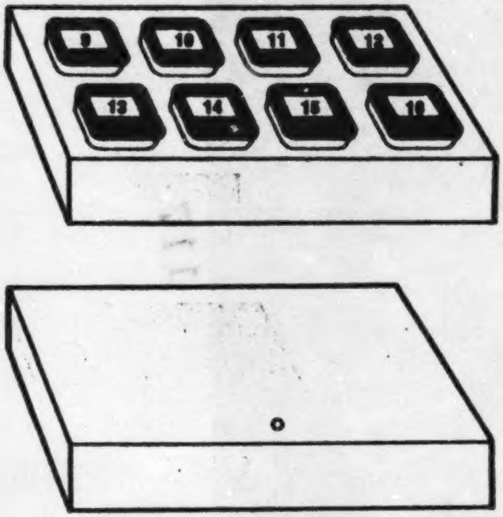
25 Changes in Perception of Odors

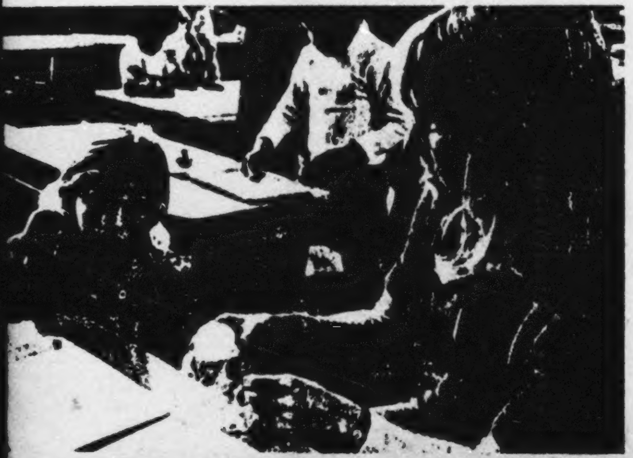
TEACHING MATERIALS

For a group of six to eight children:

- an odorous object*
- vanilla extract*
- cotton balls (Container 10)
- clear plastic wrap*
- can of room freshener*
- several trays (Box C)

* provided by the teacher





ADVANCE PREPARATION

Bring an odorous material, such as garlic, onion, cloves, perfume, or blue cheese, to class. If the sample is a liquid, pour some on a cotton ball. For the odor-table activity, collect several odorous objects and place each on a tray.

TEACHING SUGGESTIONS

Masking odors. Let the children smell the odorous object you selected. Then cover it with clear plastic wrap while they watch. Let them smell it again and discuss any differences they observe. Unwrap the object and let the children smell it again. Then spray it with room freshener and let them observe the short- and long-term effects of the room freshener. Discuss the similarities and differences in the powers that the spray and the plastic wrap have to mask odors. Do not help the children in the discussion, even though they will probably have difficulty finding the right words to describe their experiences. Repeat this activity several times, changing the object each time.

Odor fatigue. Invite a child to smell some vanilla extract for a minute or two. Soon, his sense of smell will fail him. It is interesting to watch his reaction when he realizes what has happened. Encourage him to discuss the change with the group. Repeat the activity with other children.

Odor table. Place the trays of objects on a table where the children can go during free time to smell the objects and discuss their odors. Change one item each day to keep interest high. Caution the children not to taste the objects.

Odors in the room. Invite the children to find odorous objects inside or outside the classroom. They might go on an odor hunt, smelling objects that are a regular part of their environment—not materials on the odor table. Ask individual children to describe odors they find. See if the other children can guess what objects their classmates describe.

LESSON PLAN #2 ODOR

Title: Odor: Odor Boxes

Source: SCIS, Beginnings, p. 58 (next page)

Content Objective(s): Children identify and describe various odors.

Process Objective(s): Same as above.

Equipment:
Odor box
Objects w/strong odors(onions, garlic, ammonia etc.)
Cotton balls
Mag's
Scissors
Paste

Procedure/Activities/Trips:

1. Guess odor. Place odor in a box, have children smell and identify. Discuss
2. Odor Vocabulary. Talk about odors-have them name some and tell why or why not they like them.
3. Odor/Picture Match. Give each child an odor have them search magazines for a picture of the smell then paste on construction paper.

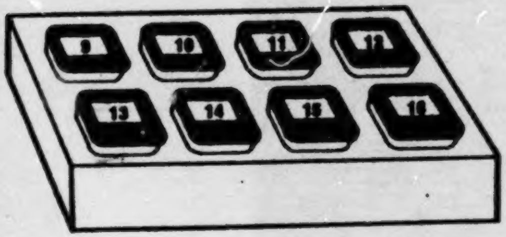
27 Odor Boxes

EACHING MATERIALS

or a group of six to eight children:

- 4 odor boxes (Container 10)
- 4 objects with strong odors*
- tape*
- cotton balls (optional) (Container 10)
- magazines*

* provided by the teacher



ADVANCE PREPARATION

Collect four objects such as a piece of garlic, an onion, a fresh flower, or samples of vinegar, sauerkraut, cologne; put one in each odor box. If the material is a liquid, pour a sample on a cotton ball and put the cotton ball in the box. If an object is likely to rattle, tape it securely inside the box before closing the lid. Tape the boxes closed. Note: You use the same boxes for the odor-box and the sound-box activities.

TEACHING SUGGESTIONS

Show the children the boxes. Invite a child to select one and to describe the odor he smells; encourage him to identify the object by its odor. Let each child in the group have a chance to smell all the boxes and try to identify the objects inside. (The boxes should not be opened.) Repeat the activity on other occasions, using other objects. Children can sort the boxes according to whether they like or dislike the smell. Ask them to explain their choices.

Vary the activity by putting the same kind of object in two of the boxes. Ask the children to try to find the two boxes having similar odors. Invite them to use magazines or other sources to find pictures of the objects they think are in the boxes. When all objects have been identified, let the children compare the ones for which they have pictures with the actual contents. The pictures can be displayed.

Odor vocabulary. Invite the children to name objects whose odors they do or do not like and to tell why. Encourage them to use complete sentences; other children can suggest needed words.

LESSON PLAN #3 ODOR

Title: Odor: Identify Odors

Source: SCIS, Beginnings, p. 57 (next page)

Content Objective(s): To identify and become aware of various smells.

Process Objective(s):
Observation #1, 2
Inferring #1, 2, 4
Classifying #1, 2
Communicating, verbally #1

Equipment:
5 spray bottles
5 liquids

Procedure/Activities/Trips:

1. Guess the smell. Put liquids in spray bottles. Spray, then have children identify odor.
2. Mystery Odor. Spray an odor and ask the children to identify. Give clues if necessary.
3. Where would you find: Spray an odor ask children where they would find it, ie, bacon smell (kitchen).

26 Identifying Odors

TEACHING MATERIALS

For a group of six to eight children:

- 5 spray bottles (Container 11)
- 5 liquids (provided by the teacher)

9
10
11
12
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16

ADVANCE PREPARATION

Collect some vinegar, perfume, and vanilla extract and pour one liquid in each of three bottles (fill them only partially). Collect other liquids that have distinct odors for the mystery liquids activity. Peppermint extract and lemon juice are good choices.

TEACHING SUGGESTIONS

Spray one of the liquids near the group and have the children identify the odor. (Be careful not to direct the spray at a child's face.) Ask the children to make up a story related to the odor they smell. You might begin the story for them: "You walked into the kitchen and smelled vanilla. This odor told you that. . . ."

After all groups have smelled each odor several times, spray two of the liquids in different parts of the room and challenge the children to identify them. The answers they give will depend on where they are in the room.

Mystery liquids. Spray the mystery liquids in the classroom at unscheduled times. Invite children to identify and compare the odors. Give clues about the mystery odors, such as "You usually find this in the kitchen," or "Some candy smells like this one."

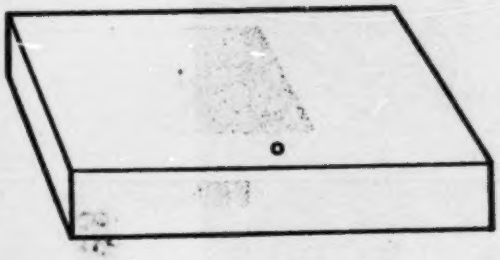
LESSON PLAN #4	ODOR
Title:	Odor: Odor Hunt
Source:	SCIS, Beginnings, p. 59 (next page)
Content Objective(s):	The children will be able to identify, compare and talk about odors.
Process Objective(s):	Same as above.
Equipment:	Plastic bags Paper bags Pencil
Procedure/Activities/Trips:	1. Collect objects of various odors. Classify as to pleasant or unpleasant. 2. Group odors according to strength and weakness. 3. Take children to the school yard for an odor hunt. Encourage them to find and describe as many different odors as possible.

28 Odor Hunt

TEACHING MATERIALS

For the teacher:

12 plastic collection bags (Box C)
paper*
pencil*
* provided by the teacher



ADVANCE PREPARATION

Select an area for the odor hunt. A park, a woodland, or a garden are good choices. This activity may be carried out with a small group or with the whole class.

TEACHING SUGGESTIONS

Take the children to the area you selected, bringing the bags, paper, and pencil. Challenge the children to find and describe to you as many different odors as they can; record their observations. Objects with particularly interesting odors can be brought back in the plastic bags. When you return to the classroom, encourage interested children to sort the collected objects according to similar odors or strong and weak odors. The children might also wish to sort the objects by pleasant and unpleasant odors. Discuss any disagreements. On another day, discuss the trip with the children and read them your list of their observations.

FOREWORD

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SOUND

LESSON PLAN #1 SOUND

Title: Sound: Sounds in the Classroom-Introduction

Source: SCIS, Beginnings, p. 61 (next page)

Content Objective(s): The children will become more aware of sounds and compare and describe sounds.

Process Objective(s):
Observing #1, 2, 3
Inferring #1
Communicating, verbally #1

Equipment:
Filmstrip-"What Do I Hear When I Listen" (EBC)
Projector "You and Your Ears" 8 min.
Metal pie pan
Bag of sand
Clay
Blindfolds
Sound tape
Tape recorder

Procedure/Activities/Trips: Introduce tapes of sound.

1. Show filmstrip called "What Do I Hear When I Listen?" if available, and F1271-"You and Your Ears"
2. Describing Sound. Drop objects (one at a time) behind a screen. Ask children to guess what the object is.
3. Guess the Sound. Blindfold children. As they listen create various sounds-open a window, shut a door, run water, drop a block etc.
4. Sounds in the environment. Bring a tape recorder with sounds. Ask the children to identify. Have them find pictures that show sounds being made or people talking etc. Discuss with them while they are sharing.

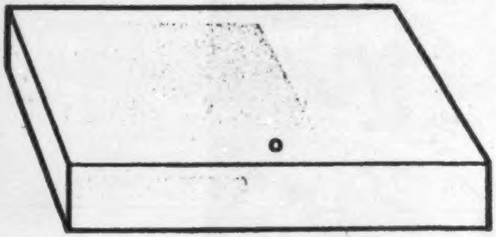
29 Sounds in the Classroom

TEACHING MATERIALS

For a group of six to eight children:

- touch screen (Box C)
- metal pie plate*
- wooden block*
- bag of sand or sugar*
- lump of clay*
- blindfolds*

* provided by the teacher



ADVANCE PREPARATION

Put some objects in a drawer or other place from which you can take them without the children seeing them.

TEACHING SUGGESTIONS

Describing sounds. Drop several objects, one at a time, out of the children's view. You can do this behind the touch screen on a table or behind a cabinet. Each time, ask children to describe the sound they hear and to try to identify the object. The descriptions are more important than the accurate identification of the objects. As they become more experienced, use objects (like a metal bell) that produce complicated sounds.

Identifying sounds. Blindfold the children, or ask them to close their eyes. As they listen, make some sounds: open a window; shut a door; play the piano; use the stapler; turn on the water faucet; walk, skip, or hop across the room; jump rope; or bounce a ball. Invite the children to identify each sound, imitate it, and describe how it was made. Use this activity on several occasions.

Sound and silence. Ask the children to cover their ears and remain silent. After a minute, tell them to uncover their ears and to listen for sounds. They should notice sounds they usually miss. Is the clock ticking? A bird singing? Does someone cough?

Counting sounds. Stand behind the children so they cannot see you. Either bounce a large ball or clap your hands. Do it slowly and have the children count the number of bounces or claps. The child who counts correctly becomes the next "bouncer" or "clapper." You can encourage the children to clap their hands in rhythm with the leader.

Locating sounds. Blindfold two children. Ask a third child to walk quietly from one part of the room to another, stopping occasionally to tap objects with a stick. After each tapping sound, ask one blindfolded child where the sound came from; ask the other blindfolded child what object was hit to produce the noise.

Sounds in the environment. Ask your pupils to think of sounds that tell us something, such as the blare of a car horn. The children will probably think of sounds made by an alarm clock; a kitchen timer; a fire, police, or ambulance siren; a telephone bell; a doorbell. Ask what each sound means to us. You might invite children to bring in pictures that show situations involving sounds. Give each child who brings a picture an opportunity to present and describe it to the class. If there [illegible] disagreement about a picture, encourage discussion among the [illegible]dren.

LESSON PLAN #2 SOUND

Title: Sound Boxes

Source: SCIS, Beginnings, p.63 (next page)

Content Objective(s): The children will be able to identify sounds.

Process Objective(s):
Inferring #1
Observing #1, 2, 3
Classifying #1
Communicating, verbally #1

Equipment:
Boxes
Various objects

Procedure/Activities/Trips: Sound Boxes.

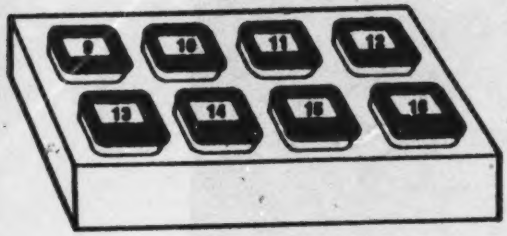
1. Play record on sound and have children identify sound.
2. Put an object in a box, ask children to shake the box, then have them identify the sound
3. Using sound boxes put similiar sounding objects in the boxes. Have children shake the boxes and identify . (2 & 3 way sound identification).

31 Sound Boxes

EACHING MATERIALS

er a group of six to eight children:

4 or 5 sound boxes (Container 10)
4 or 5 objects (provided by the teacher)



ADVANCE PREPARATION

Put an object, such as a block, marble, bell, or length of chain, in each box and close it. The same boxes are used for the sound-box and the odor-box activities.

TEACHING SUGGESTIONS

Show the boxes to the group and invite the children to shake them and listen to the sounds. After a few minutes, ask one child to shake a box and invite the group to try to guess what is inside. Encourage discussion among the children. At first, use objects that do not sound alike. Later, use similar objects in two of the boxes and see if children can match those boxes containing the same kind of objects.

Mystery boxes. Select one or two new objects and place them in a box. Put the box on a table and invite children to explore it during their free time. After a few days, hold a discussion in which children tell what they think is in the box and what their clues are. You might display five or six objects near the box and tell the children that the object inside is like one of those on the table. Invite the children to guess w[illegible] object matches the one in the box.

LESSON PLAN #3 SOUND

Title: Rhythm and Musical Instruments

Source: SCIS, PRS Kit, Sound Lesson, The Talking Drum p. 62

Content Objective(s): The children will distinguish between different sounds made by musical instruments.

Process Objective(s):
Observing #1, 2, 3
Inferring #1
Classifying #1
Communicating, verbally #1

Equipment: A good variety of musical instrument

Procedure/Activities/Trips: Discuss different musical sounds. Discuss how sounds are made.

1. Sounds are made by hitting, rubbing, plucking etc. Have children try different instruments, discover how each sounds.
2. Imitating Rhythms-Produce simple and complex rhythm by clapping, or using rhythm instruments for the children to imitate.
3. Talking Drum-beat on a drum and have children move to the sound, slow-walking, fast-running etc.

30 Rhythm and Musical Instruments

TEACHING MATERIALS

For a group of six to eight children:

rhythm and musical instruments (provided by the teacher)

ADVANCE PREPARATION

Collect a variety of instruments such as a drum, a triangle, sand blocks cymbals, a tambourine, maracas, melody bells, a guitar.

TEACHING SUGGESTIONS

Show the children the instruments you have collected and tell them the correct name for each. Let them examine the instruments and try to decide what materials they are made of. Invite the children to use some of the instruments. They will find playing instruments is more fun when accompanied by music, or when they are marching or singing.

After the children have used the instruments for several days, ask them to think about the sounds they made. Ask questions such as, "How did you make the sound on the drum?" "Did you make the sound with the sand blocks the same way?" A typical response is, "I hit the drum and I rubbed the sand blocks." In a group discussion encourage your pupils to describe and compare the sounds they made on the different instruments. This activity will help children become aware that (1) sounds are produced in many different ways; (2) sounds have characteristics that can be described (loud or scratchy, for example); and (3) some sounds are more pleasant to hear than others.

Mystery instruments. While other children are not looking, ask each of three children to pick up a different instrument and then to hide. Ask the three children to play simultaneously for the group members, who will try to determine which instruments are being played. Encourage the children to use descriptive words: "Because it sounded like metal," "It was a loud, high sound," "I could hear the rubbing noise." Those who correctly name the instruments become the next musicians.

How sounds are made. Sounds from instruments are made by hitting, rubbing, plucking, shaking, and blowing. Encourage the children to use these words as they guess how a sound is made on an instrument they cannot see. Try to include one unfamiliar instrument.

Imitating rhythms. Produce simple and complex rhythms by clapping your hands or using rhythm instruments for the children to imitate.

Tone discrimination. One way to help the children discriminate among tones is to play a single note on a piano, recorder, guitar, or harmonica and have the children hum the tone. This activity will be difficult for many children. Ask one child to play a triangle and another a drum. Have the other children listen and describe how the sounds differ. If the children do not use the words *high* and *low*, you should mention these. Repeat the activity several times using different instruments. The ability to discriminate between tonal differences takes practice. This is [illegible] difficult activity for young children who may confuse *loud* and [illegible] with *high* and *low*. Play each tone loudly and softly to help them.

LESSON PLAN #4 SOUND

Title: Sound: Recording Sounds

Source: SCIS, Beginnings, p. 64 (next page)

Content Objective(s): The children will be able to listen and identify the sounds.

Process Objective(s):
Observing #1, 2, 3
Inferring #1
Classifying #1
Communicating, verbally #1

Equipment:
Tape recorder
Tape

Procedure/Activities/Trips:

1. Sounds in the classroom. Tape the children in the classroom at various time intervals on various days.

   Play back for the class. Ask them to tell or guess who is speaking.

2. Sound Hunt. Take the children outside to the park, playground, lunchroom, etc. Ask them to describe sounds. Record these sounds to use for discussion in the classroom.

3. Neighborhood Sounds. Ask the children to listen to sounds in the neighborhood then during group time have them share the sounds.

4. Sounds at Home/the Zoo. Record the sounds, play them back and ask the children to identify them.

32 Recording Sounds

TEACHING MATERIALS

For the teacher:

tape recorder (provided by the teacher)

ADVANCE PREPARATION

You may carry out these activities with small groups or with the class.

TEACHING SUGGESTIONS

Recording sounds in the classroom. Make five- or ten-minute recordings of the children at play or at work on several occasions, without their being aware you are doing so. Then play the tape for the children. Can they identify the sounds and the locations where the sounds were made? Can they place tapes made on two or more dates in their proper time sequence?

Have each of the children talk into the tape recorder and then play back their voices. As each child hears his voice, his self-image takes on a new perspective. Ask children to identify other voices they hear on the tape. "Why does that sound like Johnny and not Susie?" "How can you tell that was Nancy, not Mike, laughing?" Encourage descriptive words that explain the differences in sounds.

Sound hunt. Take the children to a park, fire station, busy street corner, zoo, or shopping center where many sounds can be heard. Ask them to identify and describe sounds they hear. Make a recording for use in a discussion when you return to the classroom.

Alternatively, go to the site alone and make a "sounds tape" to play to the children before you take them on the trip. Their task will be to locate the sources of sounds they heard on the tape.

Neighborhood sounds. Suggest to the children that they listen to sounds on the way to and from school. Ask them to describe these sounds as part of Show and Tell, or each day have one child be the "listener" and report what he heard on the way to school.

Recording animal sounds. Take the class on a trip to a pet store, playground, or pond to record the sounds of animals. A parent or an aide can operate the recorder so that you are free to talk about the animals. After returning to the classroom, play the tape and ask the children to identify animals (including people) from the sounds. Another method is to make a mystery tape of animal sounds. Children then try to identify the animals from the sounds.

LESSON PLAN #5 SOUND

Title: Evaluation: Sound

Source: SCIS, Beginnings, p. 65 (next page)

Content Objective(s): Upon completion of this unit the children will perform all of the previously stated content objectives.

Process Objective(s):
Observing #1, 2, 3
Inferring #1
Classifying #1
Communicating, verbally #1

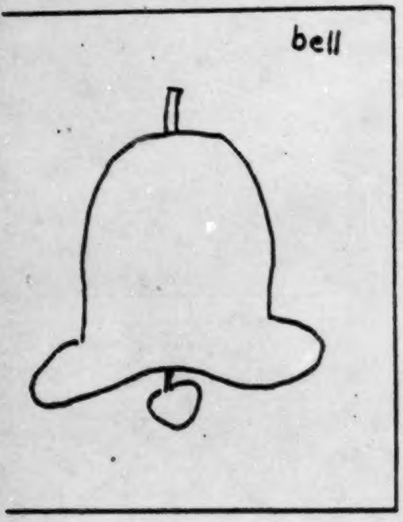
Equipment:
Screen
Assortment of objects
Sound record

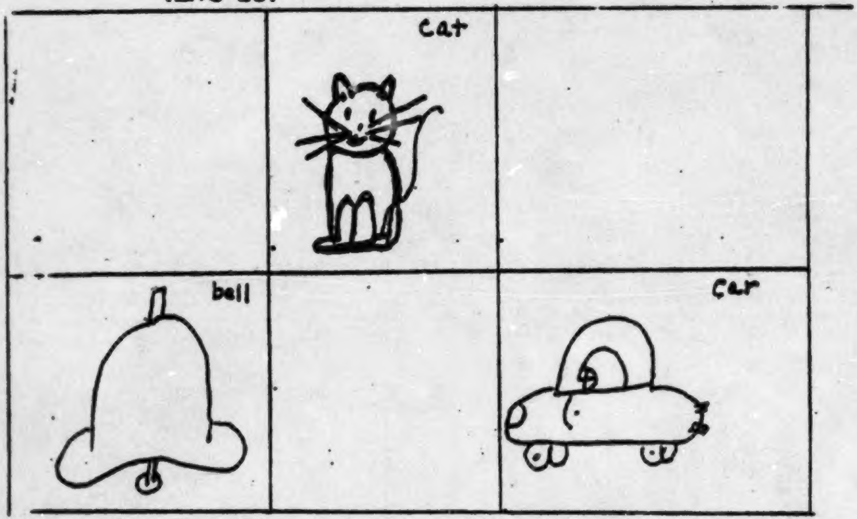
Procedure/Activities/Trips:

1. Put up screen, show children various objects. Then drop them behind the screen one at a time. Ask them to identify the sound.

2. Recording Sound. Play various sounds, as the children to identify sounds.

3. Sound Bingo. Make up bingo cards showing different objects that make sounds. Make up sound cards. Have one child as the caller. He will imitate the sound on the card and they will cover the sound picture on their card if they have it.





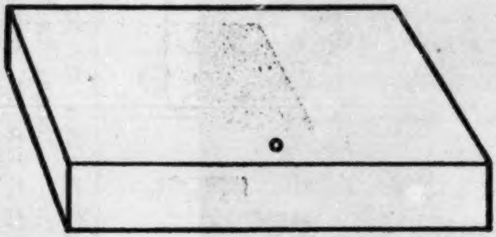
4. Tone Discrimination. One way to help children discriminate between tones, is to play a single note-then have them hum it. Have them use words like high, low. This will help with loud and soft sounds, also.

33 Evaluation—Sound

EACHING MATERIALS

or a group of four to six children:

- touch screen (Box C)
- assortment of objects (provided by the teacher)



ADVANCE PREPARATION

Use this activity at least with those children from whom you have been unable to gather feedback during the regular activities in Part Five. You can control the difficulty of the activity by the objects you select.

TEACHING SUGGESTIONS

Place two or three objects behind the screen out of the children's view. Drop one object and ask a child to describe the sound. When he finishes, show him all the objects and ask him to choose the one that made the sound.

OBSERVING

PLANTS

FOREWORD

Most of these science lessons are intended to be used with a small group of children (not more than eight) using a maximum of thirty minutes per lesson. If your teaching style includes the use of centers, the science lesson could be used in a center with the teacher or other responsible person as the resource person. If your teaching style is more traditional, you could set aside 30 minutes on successive days to work with each group while the other children have free time. You would need to have a parent helper, aide, or older student in the classroom to assist those children not involved in the science lesson. Children should be aware that each will have a turn with the lesson activities.

LESSON PLAN #1 OBSERVING PLANTS

Title: Observing Seeds

Source: SCIS, p. 90, Beginnings (next page)

Content Objective(s): Children will be able to describe seeds.

Process Objective(s): Observing
Communicating

Equipment: Seeds: sunflower, grass, pumpkin, marigold
Cardboard
Tray
Magnifiers

Procedure/Activities/Trips: Teach poem "The Little Seed"

There was a little seed
It was very small indeed
It turned into a flower
and grew, grew, grew.

2. Place each kind of seed on tray. Ask key questions.

3. Examine seeds with a magnifying glass.

4. A seed collage would be fun to make. A poster could be made using various kinds of seeds, labeling each and perhaps with pictures of the mature plant, fruit, etc.

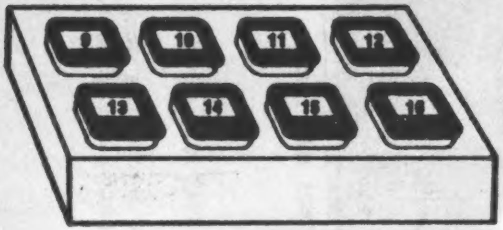
Key Questions: Are all seeds the same? In what ways are they different? Have any of you ever planted seeds? What happened?

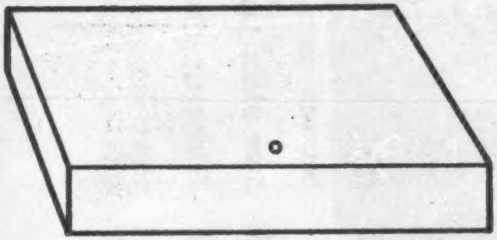
51 Observing Seeds

EACHING MATERIALS

er a group of six to eight children:

sunflower, grass, pumpkin, radish, bush bean, and marigold seeds (Container 16)
10 cardboard trays (Box C)
6–8 magnifiers (Container 12)
collection of small objects (provided by the teacher)





ADVANCE PREPARATION

Put a few of each kind of seed on a tray. Save the remaining seeds fo use in other activities. Assemble a collection of small objects, such as pebbles, beads, and macaroni, and place these on a tray.

TEACHING SUGGESTIONS

Introducing seeds. Show the group the tray of seeds and ask th children to observe and describe them. To encourage discussion, as questions such as: "Are all the seeds the same?" "In what ways ar they different?" "Have any of you ever planted seeds?" "Wha happened?" End the discussion while children are still interested. Leave the tray of seeds out for the children to observe.

Comparing seeds with other objects. At another time put out the trays of seeds and other small objects and encourage the children to observe and describe them. Ask the children how they would determine which objects are seeds. If they want to plant the objects, provide planters so they may do so. Many of your pupils will know that seeds grow. Ask these children questions that will lead them to explore the question of growth: "Which seed will grow fastest?" "Which seed will become the biggest plant?"

LESSON PLAN #2 OBSERVING PLANTS

Title: Germinating Seeds

Source: SCIS, Beginnings, p. 91 (next page)

Content Objective(s): The children will be able to describe structural differences in seeds and name the parts of a plant (root, stems and leaves).

Process Objective(s):
Observing #1, 2, 3
Communicating, verbally #1

Equipment:
Plastic cups
Seeds
Shallow dish
Paper towels
Magnifiers
Filmstrip from Science Center "Bean Sprouts" #040
Projector

Procedure/Activities/Trips:

1. Sunflower, pumpkin or bean seeds. Plant seeds between paper towel cylinder and side of cup. Fill cup with crumpled paper towels and moisten. Children observe seeds germinating in the clear plastic cups.
2. Grass or radish seeds. Wet piece of oasis place in shallow dish, sprinkle grass or radish seed on it. Have children observe seeds using magnifiers. Children describe structural differences between roots, stems and leaves.
3. Name plant parts.
4. Filmstrip, "Bean Sprouts" #040
5. Might suggest also sprouting mung beans or alfalfa - rapid change and good to eat.

52

Germinating Seeds

TEACHING MATERIALS

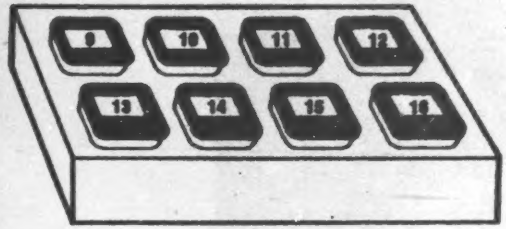
For a group of six to eight children:

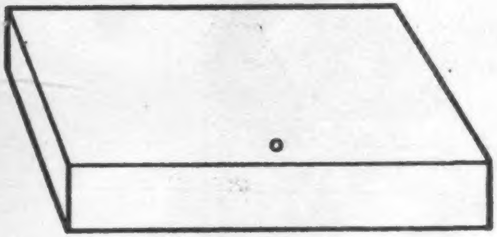
- 3 planter cups and bases (Box C)
- sticks and twistems (Box C)
- seeds from the kit (Container 16)
- 8 magnifiers (Container 12)
- 2 pieces Oasis (Box C)
- shallow dish*
- large clay flowerpot*
- soil*
- paper towels*
- water sprinkler*
- light sources (optional)*

For the teacher:

- chart paper*
- felt-tip pen*

* provided by the teacher





ADVANCE PREPARATION

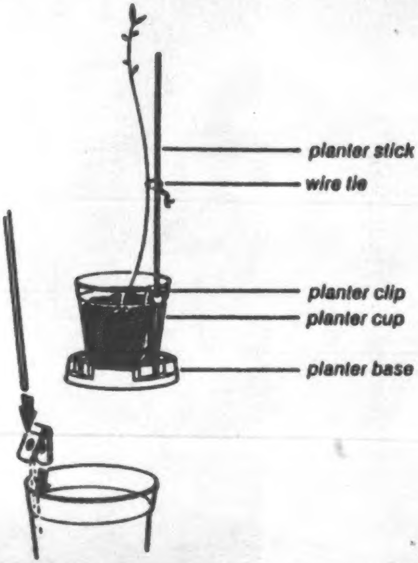
Select an area in the room where there is enough light for growin plants. If you plan to use sunflower, pumpkin, or bean seeds, soak them in water overnight to soften the seed coats. If you let the plants grow tall enough to require support, use the sticks and twistems in the kit. Select the seeds you want to use from the kit, and save the remainin seeds for other activities.

TEACHING SUGGESTIONS

Sunflower, pumpkin, or bean seeds. Roll a paper towel, forming cylinder, and place it in a planter cup that has been snapped into it base. Place the soaked seeds between the towel cylinder and the side of the cup. Then fill the cup with crumpled paper towels and moiste them. Keep the toweling wet. The seeds will germinate in the clea plastic cups as the children observe them. This setup works particularl well with large seeds.

Grass or radish seeds. Wet a piece of Oasis thoroughly, place it in shallow dish, and sprinkle grass or radish seed on it. Place severa magnifiers near the dish and encourage children to observe the seeds. They should see some changes in a day or two. This demonstratio works best with small seeds.

Observing germinating seeds. As the seeds in the setups begin t germinate, encourage children to describe structural differences between the roots, stems, and leaves. Name these plant parts for the children and encourage them to use these words when describin plants.



LESSON PLAN #3 OBSERVING PLANTS

Title: Growing Plants

Source: SCIS, Beginnings, p. 93 (next page)

Content Objective(s): Children will be able to plant seeds, care for the plants and observe changes in plants.

Process Objective(s):
Observing #1, 1, 3
Communicating, verbally #1

Equipment:
Planter cup
Assorted seeds
Soil
Tray
Crayons
Egg shells
Magnifiers
Movie, #F676-11 min. "Wonders of Plant Growth"
Projector

Procedure/Activities/Trips:

1. Place various bags of seeds on a tray. have children choose the kind he wants to plant.
2. Show children how to add soil until cup is 3/4 full.
3. When plant is few inches high have child thin, removing all but 3 or 4 of the hardest plants.
4. Show movie, "Wonders of Plant Growth"

53 Growing Plants

TEACHING MATERIALS

For each of six to eight children:

1 planter cup and base (Box C)
assorted seeds (Container 16)

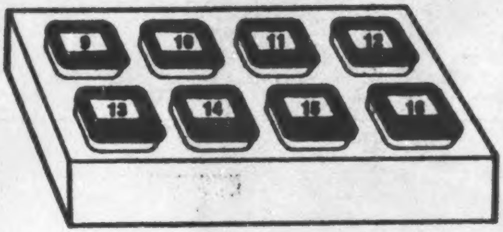
For the group:

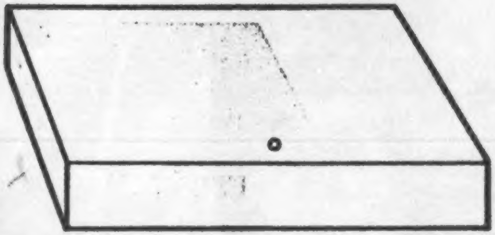
magnifiers (Container 12)
tray (Box C)
soil*
crayons*
water sprinklers*
felt-tip pens or crayons*
eggshells*

For the teacher:

1 planter cup (Box C)
other containers for planting seeds*

* provided by the teacher





ADVANCE PREPARATION

On a tray put out various bags of seeds from the kit. Each child can choose the kind he wants to plant. Save the remaining seeds for use in other activities. Twistems and sticks for supporting tall plants are provided in the kit.

TEACHING SUGGESTIONS

Planting seeds. Each child takes some seeds and a planter-cup system. Show him how to add soil until the cup is about three-quarters full. Tell the children planting larger seeds (bean, corn, etc.) to push their seeds about an inch into the soil. (Children who are planting grass or marigold seeds should sprinkle these on the surface and cover with a very thin layer of soil.) In your cup, push some seeds into the soil against the container wall so they can be seen through the plastic. Help each child label his cup with the type of seed he planted. Tell the children to moisten the soil and keep it damp. After the plants are a few inches high, the children can thin them by removing all but three or four of the hardiest plants. Invite them to use magnifiers to examine the parts of plants that were removed from the cups. Encourage them to compare the roots of different types of plants. Have the children continue to care for the plants as long as they show interest. Periodically hold discussions so that they can discuss the changes in their plants.

LESSON PLAN #4 OBSERVING PLANTS

Title: Leaves

Source: SCIS, Beginnings, p. 95 (next page)

Content Objective(s): The children will be able to sort leaves according to likenesses and differences.

Process Objective(s):

Observing #1, 2, 3
Communicating, verbally #1

Equipment:

Trays
Plastic bags
Construction paper
Tape

Procedure/Activities/Trips:

1. Collect 4 or 5 leaves from 4 or 5 different kinds of plants. Have children sort the leaves. One child can hold up a leaf of the same kind. Then place leaves on tray. Discuss likenesses and differences.

2. Matching Leaves. Tape leaf of each type on construction paper, label. Have children bring in leaves like those shown.

3. Leaf Hunt. Give each child a plastic bag to collect variety of leaves. Describe properties and ask questions about color, shape and veins.

54 Leaves

TEACHING MATERIALS

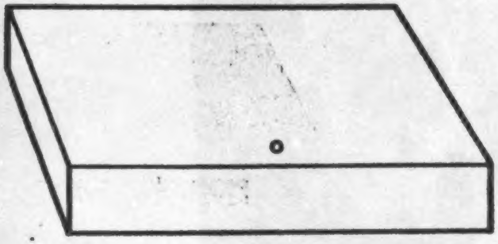
For a group of six to eight children:

- 4 or 5 cardboard trays (Box C)
- 8 plastic bags (Box C)
- collection of leaves*

For the teacher:

- 6 plastic bags (Box C)
- 4 or 5 sheets of construction paper*
- tape*

* provided by the teacher



ADVANCE PREPARATION

Collect four or five leaves from each of four or five different kinds of plants near the school if possible. Provide pine needles and grass blades along with leaves such as oak and maple. You can keep the leaves fresh for several weeks if you place them in plastic bags.

TEACHING SUGGESTIONS

Sorting leaves. Display the leaves on a table or on the floor near the group. Ask one child to select a leaf and to hold it up for others to see. Invite another pupil to hold up a leaf of the same kind. Ask the rest of the children if they agree that the two leaves are alike. Continue asking children to hold up leaves like those already selected until there are no more leaves of that type. Then ask the children to place these on a tray. Proceed in the same way for the remaining leaves.

When all the leaves have been sorted, point to the leaves on the trays and ask questions similar to the following: "What differences do you see among the leaves on this tray?" "How are the leaves on these two trays alike?" "Are all the leaves on each tray from the same kind of plant?" "How can you tell?"

You might wish to take the children outside to look for the plants that produced the leaves used in the sorting activity. If there are several plants of the same kind, the children may select different plants and still be correct.

Matching leaves. Tape one leaf of each type to a piece of construction paper and add an identifying label. Display the collection and encourage children to bring in leaves like those shown. As the collection grows, the children will learn the name of each leaf type. Occasionally, invite the children to count the number of leaves in each group.

Leaf hunt. Select a place for a leaf hunt where the trees have branches which grow low enough for the children to reach. Provide each child with a plastic bag and invite him to collect a variety of leaves.

Upon returning to the classroom, ask several children to describe some of the properties of their leaves. Ask questions like, "Are they all the same color?" "Do they have the same shape?" "Are the veins (ridges, lines) different?" "Do both sides of a leaf look the same?"

LESSON PLAN #5 OBSERVING PLANTS

Title: Making Leaf Prints

Source: SCIS, Beginnings, p. 96 (next page)

Content Objective(s): The children will be able to see likenesses and differences among leaves and will also express their creativity.

Process Objective(s):
Observing #1, 2
Communicating

Equipment:
Tempera
Liquid starch
Construction paper
Spoon or block print roller
Leaves
Pins
Clay
Salad oil or Petroleum Jelly
Colored tissue paper
Iron
Wax paper

Procedure/Activities/Trips:

1. Paint prints. Children paint ridge sides of leaves with tempera (mixed with liquid starch). Place painted side down on sheet of construction paper. Put newspaper on top, then rub with spoon or roller. Remove newspaper and leaf, let dry.

2. Spray prints. Pin leaves to construction paper. Spray paint around edges. Remove leaf after paint dries.

3. Clay prints. Children press vein side of leaf into clay. (see more explicit instructions in SCIS, Beginnings, p. 96).

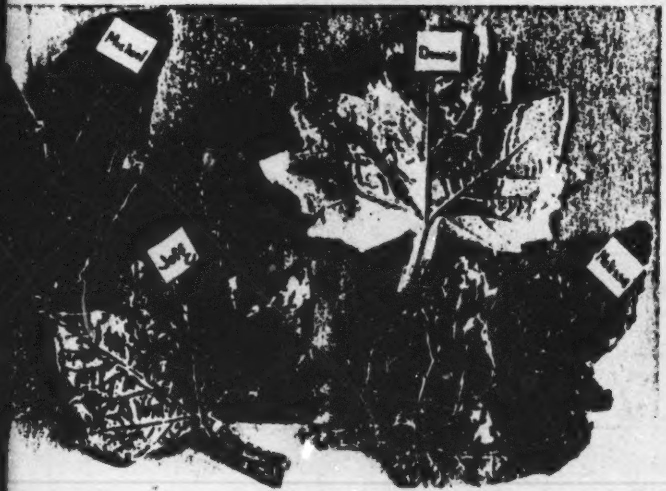
4. Wax paper prints. Children place leaves and small pieces of tissue paper between pieces of wax paper. Press sheets together with a warm iron. Use to make a mobile or hang in a window.

55 Making Leaf Prints

TEACHING MATERIALS

For a group of six to eight children:

20–30 leaves*
print-making materials*
* provided by the teacher



ADVANCE PREPARATION

Collect leaves and press them for several days between newspapers weighted with books or blocks. Read the activities in this chapter to decide which kinds of leaf prints you would like the children to make; assemble the necessary materials.

TEACHING SUGGESTIONS

Children enjoy making leaf prints. The described activities not only allow children to express their creativity but also help further their understanding of the similarities and differences among leaves.

Leaf book. Mount some leaves on tagboard or construction paper and label them. Assemble the pages into a book for children to look at during their free time.

Crayon rubbings. Invite the children to place a leaf, ridge side up, on a flat surface and cover it with a sheet of lightweight paper. Tell them to rub back and forth over the leaf with the side of a crayon until the leaf print appears.

Paint prints. Ask the children to paint the ridge sides of leaves with tempera which has been mixed with liquid starch. Tell them to place the painted side down on a sheet of construction paper, put a piece of newspaper on top, and roll with a block print roller or rub with the back of a spoon. Carefully remove newspaper and leaf and let print dry.

Spray prints. You can make negative prints while the children watch. Pin leaves to sheets of construction paper ano spray paint around the edges of the leaves. Remove the leaves after the paint dries.

Clay prints. Give each child some sturdy, well-veined leaves and a lump of clay that is lightly coated with salad oil or petroleum jelly. Tell the children to flatten the lump and press the veined side into the clay. If you use firing clay, the children can paint or glaze their "leaves."

Wax paper prints. Invite children to place leaves and small pieces of colored tissue paper between pieces of wax paper. Then press the sheets together with a warm iron. The leaves and tissue paper pieces will be permanently embedded between the wax paper sheets. These can be used to make a mobile or hung in a window.

LESSON PLAN #6 OBSERVING PLANTS

Title: Observing Plants

Source: SCIS, Beginnings, p. 97 (next page)

Content Objective(s): Children will be able to describe plants.

Process Objective(s):
Observing #1, 2, 3
Inferring #1, 2
Communicating, verbally #1

Equipment: Several potted plants

Procedure/Activities/Trips:

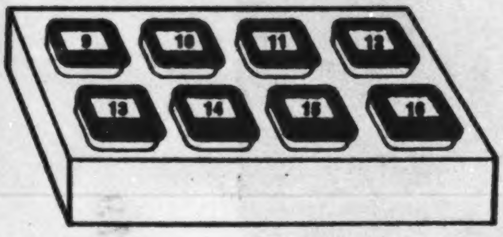
1. Describing Plants. Hold up a plant and ask a child to describe it. (Leaves, flowers and stems).
2. Observing Changes in Plants. Children describe plants then tell what difference they might observe in these plants after a few weeks, (Grow Bigger)
3. Observe and describe in other sessions.

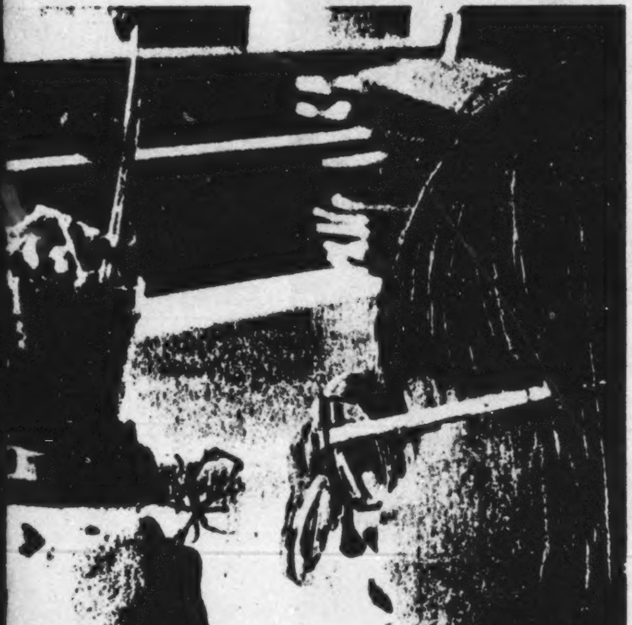
Observing Plants

TEACHING MATERIALS

For a group of six to eight children:

6–8 magnifiers (Container 12)
potted plants*
floating aquatic plants*
construction paper or cardboard*
aquarium or glass jar*
* provided by the teacher





ADVANCE PREPARATION

Obtain several potted plants, such as cactus, coleus, African violet, geranium, ivy, and philodendron, and a few aquatic plants. Place the aquatic plants in an aquarium or large jar filled with water.

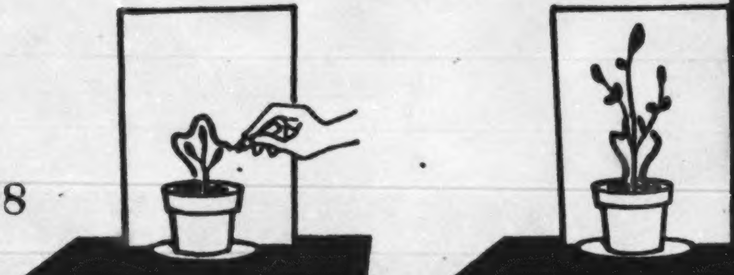
TEACHING SUGGESTIONS

Describing plants. Use several five- to ten-minute sessions for this activity, focusing the children's attention on one plant per session. Put the plants on a low table. Then hold up one plant and ask a child to describe it. Let him feel and smell the plant to get more information. He may tell you about the entire plant or about certain parts such as leaves, flowers, and stems. Encourage him to be specific in his description.

Invite your pupils to compare each new plant with those discussed earlier. Since aquatic plants may be unfamiliar to some children, introduce the potted plants for observation and description first. You might invite children to bring in small plants to add to the collection.

Children might be interested in observing the roots of a mature plant. If so, remove one plant from its pot, show the children the roots, and ask them to describe these. You might rinse the soil from the roots and place the plant in water so children can observe them more closely, using their magnifiers.

Observing changes in plants. Once more, direct the children's attention to the plants you have collected. Ask them to describe the plants; then ask them what differences they might observe in these plants after a few weeks. Your pupils will probably say that the plants will grow bigger. To help them verify this fact, place a sheet of paper or cardboard behind a plant and trace the approximate outline of the plant on it. This will serve as a "profile." From time to time, the children can make new profiles for comparison purposes. Provide at least one fast-growing plant, like a geranium or coleus, to increase the children's interest in this activity.



LESSON PLAN #7 OBSERVING PLANTS

Title: Plant Walk

Source: SCIS, Beginnings, P. 98 (next page)

Content Objective(s): Children will see likenesses and differences in plants.

Process Objective(s): Communicating

Equipment:
Crayons
Paper
Magazines or pieces of cardboard to provide hard surface for drawing

Procedure/Activities/Trips: Walk around school grounds

1. Observe growing plants.
2. Draw pictures of plants that they see.
3. Discuss plants they saw.

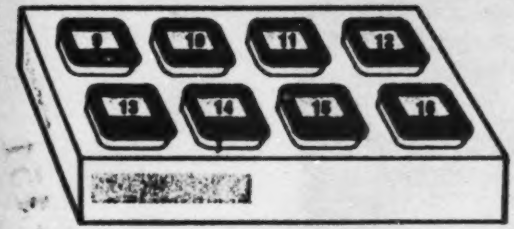
57 Plant Walk

TEACHING MATERIALS

For each child:

- magnifier (Container 12)
- drawing paper*
- crayon*
- magazine*

* provided by the teacher



ADVANCE PREPARATION

You may use this activity with small groups or the whole class. Tak along some magazines or other surfaces for drawing on. Magnifiers ca be used for closely observing the plants found.

TEACHING SUGGESTIONS

Take the children on a walk around the school grounds or around a nearby city block to observe growing plants. They should carry crayons and paper with them. Planter boxes, cracks in the cement, vacant lots, and lawns that have not been mowed recently are interesting places to look. Children can draw pictures of plants to record their observations and you might write down or tape-record what they say. On returning to the classroom, encourage the children to discuss the plants they saw. Display the pictures the children drew. If you recorded the children's observations, discuss these with them in a few days. Do not encourage the children to bring in any of the growing plants they find. Emphasize that these should be allowed to grow undisturbed.

LESSON PLAN #8 OBSERVING PLANTS

Title: Observing Flowers

Source: SCIS, Beginnings, p. 99 (next page)

Content Objective(s): Children will compare likenesses and differences in colors and shapes of petals

Process Objective(s): Communicating, verbally #1

Procedire/Activities/Trips:

1. How many shades of color can you find in this flower?
2. How many different colors can you find in this flower?
3. How many different colors can you find in the whole collection of flowers? Children pull flowers apart to observe what's inside. Compare and discuss colors and shapes of petals with other flower parts.

Children will touch and smell flowers. They will answer questions above.

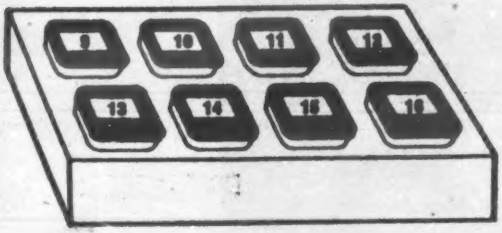
Equipment: Cut flowers
Magnifiers

58 Observing Flowers

TEACHING MATERIALS

For a group of six to eight children:

6–8 magnifiers (Container 12)
6–8 cut flowers (provided by the teacher)



ADVANCE PREPARATION

Many florists will give you flowers unsuitable for sale. These are acceptable for this activity. Check with florists in your area and obtain the flowers before the activity.

TEACHING SUGGESTIONS

Place the flowers on a table and invite pupils to observe them. Encourage children to touch and smell the flowers. Ask questions such as, "How many shades of a color or different colors can you find in this flower?" "In the whole collection?" Ask children to point to parts of the flowers. Let them pull the flowers apart so they can see what is inside. Magnifiers are helpful in this examination. Have the children compare and discuss colors and shapes of the petals with other flower parts. Do not try to teach the names of flower parts at this time. You might show the flower filmstrip again if the children seem interested.

LESSON PLAN #9 OBSERVING PLANTS

Title: Plant: Growth Stories

Source: SCIS, Beginnings, p. 100 (next page)

Content Objective(s): Children will be able to tell, in their own words, how a plant grows.

Process Objective(s): Communicating, verbally #1, 2

Equipment:
Duplicated papers
Crayons
Spirit masters

Procedure/Activities/Trips:

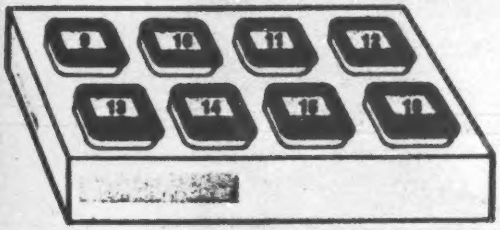
1. Make booklet on plant growth. Example, first there was a seed. Next page, I put it in the ground and watered it. Next page, some roots began to grow. (Draw pictures to show)
2. Imitating Plant Growth. Children act out the way plants grow. Pretend they seed(squat or curl up). Gradually rise and extend arms as leaves sway in the wind. Might include pretend rain, sun and wind.
3. Discuss Booklet.

58 Observing Flowers

TEACHING MATERIALS

For a group of six to eight children:

- 6–8 magnifiers (Container 12)
- 6–8 cut flowers (provided by the teacher)



ADVANCE PREPARATION

Many florists will give you flowers unsuitable for sale. These are acceptable for this activity. Check with florists in your area and obtain the flowers before the activity.

TEACHING SUGGESTIONS

Place the flowers on a table and invite pupils to observe them. Encourage children to touch and smell the flowers. Ask questions such as, "How many shades of a color or different colors can you find in this flower?" "In the whole collection?" Ask children to point to parts of the flowers. Let them pull the flowers apart so they can see what is inside. Magnifiers are helpful in this examination. Have the children compare and discuss colors and shapes of the petals with other flower parts. Do not try to teach the names of flower parts at this time. You might show the flower filmstrip again if the children seem interested.

LESSON PLAN #10 OBSERVING PLANTS

Title: Fruits and Vegetables

Source: SCIS, Beginnings, p. 101 (next page)

Content Objective(s): Children will be able to describe pictures of fruits and vegetables.

Process Objective(s): Communicating, verbally #1

Equipment: 6 to 8 pieces of assorted fruit (real or plastic). Pictures of plants with fruits

Procedure/Activities/Trips:

1. Display pictures and pieces of fruit.
2. Children describe the plants.
3. Children try to match the fruit.
4. Milton Bradley has a good set of poster pictures that has the mature fruit or vegetable along with the plant from which it comes.

60 Fruits and Vegetables

TEACHING MATERIALS

For a group of six to eight children:

6 or 8 assorted pieces of fruit (real or plastic)*
pictures of fruit plants*

* provided by the teacher

ADVANCE PREPARATION

Obtain pictures of fruit plants that include the edible parts, such as an orange tree bearing ripe oranges. Try to obtain as many pictures as you can that show plants growing the fruits you intend to bring to class.

TEACHING SUGGESTIONS

Display the pictures and pieces of fruit and invite the children to describe the plants and try to match the fruits with the pictures. Point out the edible parts of each plant. You might encourage the children to bring in pictures of fruits to combine and compare with yours. If you wish, tell them the difference between fruits and vegetables: vegetables are edible parts of plants; fruits always contain seeds unless they are specifically developed to be seedless.

Many children have never seen the sources of some food they eat. If possible, take the children to a vegetable garden or orchard to observe growing fruits and vegetables.

LESSON PLAN #11 OBSERVING PLANTS

Title: Growing Parts of Plants

Source: SCIS, Beginnings, p. 102 (next page)

Content Objective(s): Children will observe the growth of new plants from plant parts.

Process Objective(s): Communicating, verbally #1, 2
Observing

Equipment: Plant parts: sweet potato, carrot, pussywillow
Containers

Procedure/Activities/Trips:

1. Sweet Potato. Place in jar of water so only an end is submerged. Place in warm, dark place. In 10 days move to sunny spot.
2. Carrot. Cut two inches from top, set carrot top in shallow dish of water.
3. Pussywillow Stems. Place in large jar of water.

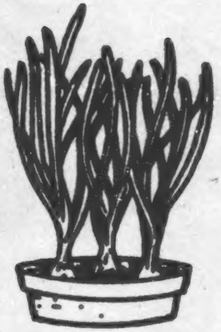
61 Growing Parts of Plants

TEACHING MATERIALS

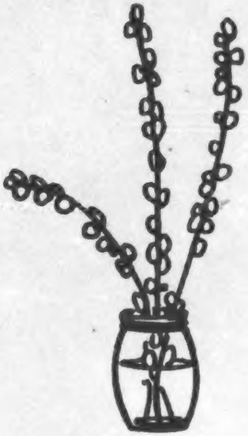
For a group of six to eight children:

plant parts*
containers*

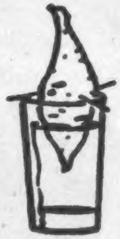
* provided by the teacher



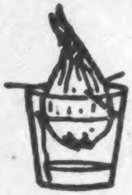
narcissus



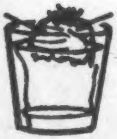
pussy willow



sweet potato



onion



carrot

ADVANCE PREPARATION

Read the activities in this chapter, decide which you would like the children to carry out, and assemble the appropriate materials. These activities can be carried out during various seasons of the year. They can also be repeated several times.

TEACHING SUGGESTIONS

You and the children can grow new plants from plant parts. Use some of the growing techniques described to provide valuable experiences for your pupils. Encourage them to observe and describe the plant growth. After the plants sprout, you might plant them in soil so the children can continue to observe their growth. Children can draw pictures of the plants at different times and later compare the pictures. If you have a camera available, you can take pictures of the plants in various stages.

Sweet potato. Place a sweet potato in a jar of water so that only an end is submerged. Set the jar in a warm, dark place. In about ten days, when roots and stems begin to grow, move the plant to a sunny spot. Maintain the water level in the jar.

Carrot. Remove wilted leaves from a carrot, cut the carrot two inches from the top, and set the carrot top in a shallow dish of water. You may have to put pebbles or stones around it to hold it in place. New leaves will grow in a few days. You can also use this technique with beets and turnips.

Dry onion. Place the root end of an onion in a glass of water. If the glass is large, secure the onion with toothpicks. Onions grow very easily.

Bulbs. You can grow a bulb, such as narcissus or daffodil, in water using pebbles or rocks to hold it in place. Add enough water to cover the bottom of the bulb and place the setup in sunlight. If "planted" late in winter, it will bloom in about three weeks; if "planted" in early fall, it will take two months.

Pussy willow stems. In early spring, put bare pussy willow stems into a large jar of water. When roots appear, transfer the plants to soil or give them to interested children to care for at home. Alternatively, you can plant the stems on the school grounds and continue caring for them. Forsythia stems can also be used.